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THE SEATS and CAUSES OF DISEASES

INVESTIGATED BY ANATOMY;

IN FIVE BOOKS,

CONTAINING

A Great Variety of DISSECTIONS, with REMARKS.

TO WHICH ARE ADDED

Very ACCURATE and COPIOUS INDEXES of the PRINCIPAL THINGS and NAMES therein contained.

TRANSLATED from the LATIN of

JOHN BAPTIST MORGAGNI,
Chief Profeſſor of Anatomy, and Preſident of the Univerſity at PADUA,

By BENJAMIN ALEXANDER, M. D.

IN THREE VOLUMES.

VOL. III.

LONDON,
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TO

Dr. HUNTER.

SIR,

THE particular nature of the work before us gives a propriety to this addreſs. A performance which ſtands upon the baſis of anatomical ſcience cannot ſeek the ſanction of a more reſpectable name than that of Dr. Hunter. Great as the author allowedly is, and great as I have frequently known you confeſs him, it cannot but give additional weight to his work, and ſtill more to my tranſlation, that it is patroniz'd by you.

To you belongs the honour, in this country at leaſt, to have ſtripped anatomical ſcience of its myſtery and diſguiſe.—You have diveſted it of that pompous jargon and farrago of learning, with which it had been dreſs'd up in the ſchools, and have render'd its leſſons, eaſy, perſpicuous, and familiar. The ſcience has, by your means, become more univerſally diffus'd, and more clearly underſtood. And perhaps there is no city in the world, where the attentive practitioners of the ſeveral branches of medicine, act with greater certainty to themſelves, and ſafety to their patients, than in this metropolis.

For myſelf, I muſt confeſs that it is to you, chiefly, I owe that little ſhare of anatomical ſcience, of which I am poſſeſs'd.—From thence ariſes every degree of certainty that I find in determining the ſeats, and in great meaſure the cauſes, of diſeaſes. And though I do not affect to deſpiſe, but even greatly eſteem, the ſcience of chemiſtry, and other branches of natural knowledge, auxiliary to medicine, I cannot, however, but give the firſt place to anatomy, as being the very baſis, the ground-work, and in-

deed, if I may be allow'd to ſpeak thus, the grand luminary, of Phyſic.

What is it we do not owe to you in anatomy? You have not only rendered that which was already known, clearly attainable by the induſtrious and attentive mind, but have made many happy diſcoveries, which lead on to the moſt pleaſing and important conſequences. And though the public has ſeen many inſtances of this improvement already, we do not doubt but we ſhall ſtill be witneſſes to others. That unwearied aſſiduity with which you purſue your inquiries, in ſpite of the moſt lucrative avocations, cannot but produce the moſt uſeful effects.

To this aſſiduity the community ſtands greatly indebted. And this the Community will in general allow, however the jealous few may retract. It is a circumſtance frequently attendant on great characters, to be envy'd and detracted from while living: And nothing but death itſelf can pay the juſt reverence to ſuch reputation.

You will however permit me to hope, Sir, that it will be long, very long, before full and ample juſtice be done to your character. And this you will the more readily believe, when I aſſure you that, in ſuch a deſire, I am far from being deſtitute of the moſt ſelfiſh regards. For I cannot but hope, from the many inſtances of favour and partiality I have met with from Dr. Hunter, that I ſhall, during the courſe of our reſidence here, be indulg'd with the honour of ſubſcribing myſelf

his very reſpectful friend,

and greatly obliged humble ſervant,

April 7th, 1768.

BENJ. ALEXANDER.

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THE

SEATS and CAUSES

OF

DISEASES

INVESTIGATED BY ANATOMY.

BOOK the FOURTH,

Wherein the Diſorders relative to Surgery, or thoſe which affect the whole Body, are treated of.

LETTER the FORTY-NINTH

Treats of Fevers.

1. ALTHOUGH you not long ago receiv'd a very long letter from me, you may now, perhaps, expect a longer, as the ſubject of this is fevers; diſeaſes which are of all the moſt frequent, the moſt various and manifold. And, indeed, you ſee that the firſt ſection of the fourth book, which is aſſign'd to them in the Sepulchretum, is one of the moſt prolix. Yet this letter, though it may not be the ſhorteſt, will, at leaſt, not be one of the longeſt. For why ſhould I here, in imitation of that ſection, repeat what I have already ſufficiently ſaid, or anticipate what I ſhall hereafter ſay, with greater propriety, when treating of a great number of diſorders, each of which has its proper fever, if I may ſo ſpeak, naturally join'd with it? And in that ſection there are a great number of obſervations which Bonetus himſelf confeſſes are propos'd in other places, whereto he refers; and out of thoſe of which he makes no confeſſion, I think I have found others beſides, in regard to which he might have made the ſame confeſſion.

And, indeed, I have more than once obſerv'd hiſtories to be put down twice over in that ſame ſection; which, however, I do not particularly refer you to, becauſe I imagine that you yourſelf, if you read it more accurately, and with more attention, than I, will remark a ſtill greater number; and at the ſame time be ſurpriz'd at ſome in which you read of incredible things; as, for inſtance, that in a peſtilential hemitritæos (*a*), a vaſt quantity of bugs or flies was found betwixt the meninges of the brain; that in certain peſtilences (*b*), "vipers and lizards" had been generated in human bodies, in ſeveral parts, which, after the moſt excruciating pains, kill'd "a thouſand men "every day;" or (*c*) that "the livers both of men and horſes were found to be "full of toads."

It is my determination, however, to copy in this place ſome obſervations in particular, which ſtill remain uncopied among the papers of Valſalva; in moſt of which you will rather be ſurpriz'd at this circumſtance, that after violent fevers, or thoſe that kill unexpectedly ſoon, ſcarcely any thing, and ſometimes nothing at all, is found, which might bear any cor-

(*a*) Obſ. 57. § 11. (*b*) Obſ. 62. § 8, & 9. (*c*) Ibid. § 10.

reſpohdence to, or competition with, their violence or impetus; ſo far is the cauſe by which fevers become fatal not uncommonly latent.

2. A man, about thirty years of age, was ſeiz'd with a ſlow fever, which was attended with no ſymptom worthy of remark, except that his appetite was entirely loſt. The pulſe and ſtrength of the patient fail'd every day; and at length he died ſuddenly.

The body being diſſected by Valſalva, all the viſcera were found to be in a ſound ſtate, except the following. The gall-bladder contain'd a bile which was ting'd of a brown colour; and in this bile was a calculus of the bigneſs of a *dens molaris*, of a pallid colour, and eaſily friable. Internally it was hollow, and had many other calculi included in it, and thoſe of a black colour. The lungs were diſtinguiſh'd with black ſpots. In the pericardium was little or no ſerum. The blood in this body was very grumous, and in the ventricles of the heart was coagulated.

3. Whether you ſuppoſe this to have been a ſlow or a malignant fever, certainly the preternatural appearances that were found by diſſection, frequently occur in others alſo, who are not carried off by a diſeaſe of this kind, and particularly not by a death of this kind. It does not ſo frequently happen, that thoſe appearances are ſeen in the heart itſelf, which Valſalva ſaw in a boy whom I ſuppoſe a hectic fever carried off; although there are ſome things in regard to which you would wiſh to know whether they exiſted in the living body, or not, and perhaps even in the body after death.

4. A certain boy died emaciated. The heart was ſtrongly connected with the pericardium; which being ſeparated therefrom together with the fat, through all the external ſurface of the muſcles of the heart, certain whitiſh bodies were ſeen lying at a diſtance from each other. Moſt of theſe reſembl'd ſmall grains of millet-ſeed in their figure, magnitude, and colour; but ſome were a little larger, and of an irregular figure. On the ſurface of the diaphragm the lymphæducts appear'd pretty evidently.

5. But now let us go on to ſome things that relate to another kind of fever, which the ſame perſon obſerv'd in three women.

6. A woman, about thirty years of age, of a bilious temperament, who already had labour'd under a double tertian fever for a long time, receiv'd a blow upon the abdomen with a ſtick. Being receiv'd into the hoſpital of St. Mary de Vita, ſhe complain'd only of a pain in her abdomen. But on the third day after receiving the blow, ſhe began to be delirious. Her pulſe was ſmall and quick. She threw up from her ſtomach, more than once, a humour like water wherein freſh meat has been waſh'd. At length, the diſeaſe increaſing every day, ſhe died.

The muſcles of the belly were found to be contus'd; yet in ſuch a manner, that no mark of contuſion appear'd either externally, or within the abdomen. The liver was whitiſh, and inclin'd to hardneſs in ſome degree: the gall-bladder, which was of a remarkable magnitude, contain'd about three ounces of bile, of a black colour; ſome portion of which fluid was alſo found in the ſtomach. The other parts of the belly were in a natural ſtate. In the thorax, the lungs, on that ſurface which was turn'd to the vertebræ, were affected with a conſiderable phlogoſis, but in other reſpects ſound. The right ventricle of the heart contain'd a ſmall polypous concretion.

7. Whoſoever

7. Whoſoever had conſider'd only the blow upon the abdomen, and the complaints made by the woman of pain in this part, would have attributed the ſymptoms that follow'd to ſome viſcus of the belly having been injur'd thereby. But the diſſection ſhow'd, that whatever diſorder there was in the liver related, rather, to that long-continu'd fever; or, at leaſt, in the opinion of Valſalva, who prefix'd this title to the obſervation, *De Tertiana Duplici*, whether he ſuppos'd the whole of this morbid appearance to have related to the cauſes of that diſorder, or to the effects of it. What had been added thereto on occaſion of the blow, in a woman of a bilious temperament, the inſpection of the brain, perhaps, might, as the delirium ſeems to hint, have ſhown. For as to the conſiderable phlogoſis of the lungs, who can, for a certainty, affirm that, as it occupied the poſterior parts, it was not owing rather to the ſupine poſture of the body; as I have admoniſh'd on a former occaſion (*d*), and as we ſee frequently happen? And this I would have you ſuppoſe to be ſaid in regard to the following hiſtory alſo.

8. A virgin, of two-and-twenty years of age, having labour'd many days under a double tertian, and being afterwards ſeiz'd with an ardent fever, and troubl'd with a pain of the head and the whole body, was carried off thereby.

In the belly, at the extremity of the inteſtinum ileum, in the part where it is connected to the meſentery, were prominent many little bodies, which in their magnitude, form, and colour, reſembl'd the granules of gun-powder. In the uterus many round bodies, like glands, were protuberant; on the rupture of which a viſcid humour was diſcharg'd. Except theſe things, all the parts of the belly were in a natural ſtate. But in the thorax, the lungs, where they were turn'd towards the back, were ſlightly inflam'd; and in the right ventricle of the heart was a polypous concretion.

9. Whether theſe round bodies were protuberant on the external or the oppoſite ſurface of the uterus; and, in like manner, whether thoſe black little bodies, or rather points, poſſeſs'd this or that ſurface of the inteſtine; it does not ſufficiently appear from what cauſe the tertian in the firſt place, and after that the ardent fever, had its riſe. It does not, I ſay, ſufficiently appear: not that it eſcapes me in what manner very learned men have accounted for recurrent fevers, from a viſcid humour being diſcharg'd out of more than one lurking place, within a certain time; or that thoſe black points might be very ſmall inflammations, already degenerating into a gangrene: but becauſe I know that both of theſe diſeaſes have been in many, who had not been afflicted with fevers of this kind, but with quite different diſorders, which I look for in this hiſtory in vain, where the ſeat of thoſe diſorders is pointed out.

10. A woman, of five-and-twenty years of age, and of the ſame temperament as the former (*e*), had come into the ſame hoſpital at the time when ſhe began to be affected with a difficulty of breathing. With this difficulty were join'd a pain in the left part of the thorax, a certain ſound of matter within this cavity at the time of reſpiration, and a pulſe which was ſoft indeed, but very frequent. On the fifth day the jaundice came on, which, after having continu'd quite to the eighth day, vaniſh'd. Then, by reaſon

(*d*) Epiſt. 4. n. 13. (*e*) N. 6.

of

of the obſtinacy of the fever, venæſection, which had been made uſe of on the firſt days, was again repeated. At length, death ſuddenly came on; for the fever was not of ſuch a kind as to threaten death at that time.

The belly being open'd, every thing appear'd to be ſound; except that half a pint of water was found in the whole of that cavity: which circumſtance had frequently, however, been found in other bodies alſo. In the thorax, the right lobe of the lungs, which adher'd to the ribs on its ſuperior part, was inflam'd on its inferior part; and from the ſubſtance of it, when cut into, a little ſerum was diſcharg'd. Yet the left lobe was not only free from the ribs on all ſides, but was likewiſe found to be in a ſound ſtate. From the right ventricle of the heart, a polypous concretion, which had its baſis in the faſciculated texture of that cavity, was produc'd into the vena cava, being every-where of a firm compages, and of a colour in one part pallid, and in another ſomewhat red.

11. If Valſalva himſelf had not entitl'd this obſervation *De Febre Ardente*, I ſhould have claſs'd it rather with the peripneumonies: although, even on this ſuppoſition, we ſhould not very well underſtand how it happen'd, that the patient died ſuddenly. Nor yet does it appear why, although the pain was on the left ſide, the inflammation was on the right; unleſs, perhaps, where the one or the other is mention'd, one ſide was put down for the other, by a ſlip of the pen, as frequently happens. This, however, is certain from the aphoriſm of Hippocrates (*f*), that, in reſpect to this diſeaſe, but an ill omen is to be drawn from a jaundice being added to the fever before the ſeventh day. But if you ſuſpect that any thing malignant had lain hid in any of the fevers hitherto propos'd; you will ſtill more ſuſpect it in that, which Valſalva has left us the deſcription of in the following manner.

12. A man, of forty years of age, lay ill in the ſame hoſpital, by reaſon of a wound in the tibia with a blunt inſtrument. And when his wound began to be in a very good ſtate, and he himſelf was quite free from fever; he was ſuddenly ſeiz'd with an acute fever. And this growing more and more violent, he was taken off thereby. In the carcaſe was no morbid appearance, except that the blood kept nearly its natural fluidity.

13. What is more natural in this caſe, than to think as Riverius (*g*) did in a certain caſe of his? I mean in the caſe of a boy, who had been taken off by a very acute fever, attended with ſymptoms which brought on a great ſuſpicion of inflammation in the viſcera; whereas, by diſſection, he found "all the viſcera" (for ſo Riverius has written, and not, as, through the great careleſſneſs of the printers, it is copied into the Sepulchretum (*h*), "all "the ſymptoms") in a very good "ſtate;" and, not meeting with any apparent cauſe of ſo many ſymptoms, accounted for the diſeaſe from ſome latent malignity.

And this you will perhaps do the more readily, becauſe here, at leaſt, the fluxile ſtate of the blood was apparent. For ſome of the moſt eminent phyſicians have taught us, that a great number of malignant fevers are join'd with a diſſolution of the blood. And theſe we have alſo follow'd, in ex-

(*f*) 6. ex Sect. 4. (*g*) Cent. 2. Obſ. 83. (*h*) in Additam. ad hanc Sect. Obſ. 10.

plaining

plaining other obſervations of Valſalva (*i*), yet with this reſtriction, that as malignant fevers do not all diſcover themſelves in one and the ſame way, we do not think they ought to be deſerted, who have affirm'd, on the other hand, that many of them are alſo join'd with a concretion of the blood. For the opinion is favour'd not only by others, but by this obſervation in particular that I am about to ſubjoin, which is the laſt I ſhall give you from the papers of Valſalva, and is inſcrib'd with this title by himſelf, "Of a ma- "lignant fever and obſtinate coſtiveneſs."

14. A nobleman, about forty years of age, who, even when in health, was ſubject to ſuch a coſtive ſtate of bowels, that he could never go to ſtool without the uſe of purging medicines, having remov'd his habitation from his native country, where he liv'd in a thin air, to one that was more thick; after a ſhort time was ſeiz'd with a fever, which was attended with no other ſymptom but this, that the patient complain'd of continual anxiety of mind, and of watchings. But a pain of the head having come on in the courſe of the fourteenth day, and the pulſe now and then appearing, and ſoon after being ſo contracted, that frequently it could not be perceiv'd by the phyſician; he made an exchange of life for death on the ſame day.

The fundus of the ſtomach was ting'd of a black colour. The inteſtines, and eſpecially the large ones, were contracted. The other viſcera of the belly were ſound. The blood was very much coagulated.

15. I will now join to theſe diſſections, ſome inſtances either of obſervations or animadverſions of my own, or my friends, that relate to the kinds of fever taken notice of already, and to others. And I ſaid ſome inſtances; for as, in obſervance of the above order, we begin with ſlow and hectic fevers; you have already had others in the letters before ſent to you, either when I took notice of an abſceſs of the thorax purpoſely, or even ſometimes when I took notice of an abſceſs of the belly (*k*) in a tranſitory manner. I will add one example or two here, even without a manifeſt abſceſs.

16. A man who was greatly emaciated, and therefore thought by ſome to have a phthiſis, though it ſeem'd otherwiſe to us, at length came into this hoſpital, where he made his exit from this life, after the beginning of March, in the year 1747.

The thorax, the belly, and the head, being diſſected, the lungs were found to be ſound, and the other viſcera without any taint, except that the dura mater was very thick, and the brain very lax. And I moreover obſerv'd, when I was going about to demonſtrate ſome things in relation to the poſterior part of the ſpinal marrow, to the ſtudents; that this membrane, the dura mater, could not be drawn off ſo eaſily as at other times; and I was even under a neceſſity of proceeding gradually, in order to ſeparate it from the neighbouring tunica arachnoides, without laceration. However, the ſkin was very hard in this body, as it generally is in tabid bodies.

17. This hardneſs of the ſkin, whether you try it with a knife, or with needles, is very evident; and not only in phthiſical perſons on whom many have experienc'd it, but in others likewiſe who have been greatly emaciated, either becauſe no fat remains in the ſubjected membrana adipoſa, by the

(*i*) Epiſt. 4. n. 9. & Epiſt. 7. n. 2. (*k*) ut Epiſt. 46. n. 27.

unctu-

unctuouſneſs of which that might be preſerv'd ſoft, or becauſe the fleſh is collaps'd, not only for want of fat in the interſtices of the muſcles, but alſo for want of humours, which were, in great meaſure, deficient in their veſſels in ſeveral places, ſo that the ſkin being no longer diſtended, is contracted into itſelf, and becomes thicker; by reaſon of which contraction, and of the rugæ that are produc'd thereby, and theſe not only very large but very ſmall, the ſmoothneſs of it is loſt; for thus I interpret Morton (*l*), who ſpeaks of this ſubject. On the other hand, the ſkin, when diſtended by the fat beneath it, is not only ſhining and ſmooth, as every one ſees, but is preſerv'd very ſoft, as even the confectioners and makers of ſauſages know, by cutting the ſkin of hogs fleſh into very ſmall parts; ſince they uſe the leſs labour in proportion as the creature was fatter, and the greater in proportion to its being leſs ſo. But let us go on to the other diſſection, in which, indeed, evident injuries of the viſcera, both in the thorax and abdomen, appear'd, but without any abſceſs.

18. The body of an old man, who had been ſo emaciated as to be ſaid to have been waſted away by a maraſmus, which was the effect of old age, was brought into the college, that I might therewith, at leaſt, make a beginning of anatomical demonſtrations, before the end of January, in the year 1741.

In the belly the meſenteric glands were not ſo minute as they generally are at that age; and not only this, but about the iliac veſſels, from the origin thereof quite to the thigh, were a great number of glands, and thoſe very large; ſo that theſe veſſels were cover'd over with a kind of continu'd chain of them, as it were, ſome of which were equal in length to two or three inches, being large even in reſpect to thickneſs; ſo as to make it not ſurprizing, that theſe arteries ſhould ſeem to have their parietes ſomewhat inflected, and in a manner varicoſe, in conſequence of being attended by ſuch glands as theſe, and preſs'd upon by them: yet theſe glands, when cut into, did not ſeem to deviate from the ſound conſtitution of lymphatic glands.

But the ſpleen, although rather ſmall in other of its dimenſions, was thicker than is natural, particularly in the middle; and beſides that the membranous connections, by which it is join'd to the diaphragm, were themſelves alſo become thicker than uſual, it had its coat not only thick likewiſe, in the very middle of its convex ſurface, but hard alſo for a ſpace as large as a circle, the diameter of which was ſcarcely ſhorter than two inches, would occupy; and indeed in ſome part of that ſpace it was already bony; and to this coat was annex'd internally, a kind of trunk of a veſſel as it were, which was itſelf hard alſo, and went into the ſubſtance of the ſpleen. This I alſo remark'd in regard to the ſpleen: the artery which went to it was ſomewhat narrrower than is natural, from its origin at the cœliac to the extent of ſome inches, till, at the place where it began to wreath itſelf into many flexures, as it generally does, it became wider.

The bladder, which was ſo diſtended with urine as to raiſe itſelf up above the pubes, had its coats in a thicken'd ſtate; and being compreſs'd by the

(*l*) Phthiſiolog. l. 3. c. 13.

hand

hand, did not eaſily diſcharge the urine; nor could all that fluid be preſs'd out: perhaps by reaſon of the proſtate gland being enlarg'd, and every where protuberating in the cavity of the bladder, about the orifice of the urethra; for what appearances I found in this gland, I have already told you in the forty-fourth letter (*m*).

The thorax and the pericardium being open'd, we found the heart to be deſtitute of all fat, of an aſh-colour in its ſurface, and not ſmooth. The great artery had very hard valves: and this tube itſelf, at a ſmall diſtance above theſe valves, was rigid with ſcales, that lay under the internal coat, and were entirely bony: but the beginnings of theſe only, or white ſpots, appear'd in that part of the trunk which is in the belly, and in the iliac branches thereof.

Nor ought a kind of ſingular diſorder of the carotid arteries to be conceal'd: for theſe had no ſooner aſcended to one half their length, but they there diſtorted themſelves like a cochlea; and immediately return'd to their original ſtraitneſs of direction; and ſo obſtinate was this flexure, that, if you extended out the arteries in a ſtrait line, they ſoon after reſtor'd themſelves to the ſame ſtate of contorſion, upon the removal of the hand.

19. Having ſeen theſe ſeveral peculiarities, I was greatly chagrin'd to find that it was impoſſible to learn any more circumſtances in regard to this old man while living, (he having been an unknown pauper) than that he had evidently died in conſequence of being conſum'd by a great loſs of fleſh. And whether many of the appearances found in the body after death, were the effects or the cauſe, or rather both cauſes and effects, of this waſting, you yourſelf will judge. Certainly in turning over this ſection of the Sepulchretum (*n*) you will find, that, in a hectic body (*o*), other glands of the lymphatic kind were encreas'd; and that in others (*p*), the heart was not without ſome diſorder, as in that boy even of whom we ſpoke above (*q*) from Valſalva; not to ſay in another (*r*), from the ſection already referr'd to, who, having been brought into a maraſmus, had the heart, like our old man, "ſtripp'd of all its fat," and unequal with rugæ.

I omit other circumſtances from whence it might likewiſe be underſtood, that the blood, and the humours ſecreted from thence, could not, in this caſe, be impell'd in the manner that was requiſite, ſo that a proper quantity of the one and of the others might be daily ſupplied, and thruſt forwards into all the ſmall veſſels; for if in the greater part of theſe, the blood and humours are deficient, the whole body muſt of courſe be collaps'd into itſelf; and on this collaps'd ſtate, if we except the bones and the cartilages, the whole affair of great leanneſs depends. For all the ſolid parts of muſcles or membranes bear a far leſs proportion to the blood and humours, with which their veſſels and cells are extended, than the common people imagine; ſo that it would be almoſt incredible to how little a ſubſtance the body is reduc'd, when the fluids are diſſipated and fly off, if the moſt learned men had not demonſtrated it by the collection of many experiments. Yet among

(*m*) n. 20.
(*n*) libri IV. Sect. 1.
(*o*) Obſ. 16. § 2.
(*p*) Obſ. 12.
(*q*) n. 4.
(*r*) Obſ. 56. § 7.

theſe experiments I ſhould think it was leſs natural to recount that which was made by Lanciſi (*s*), with another view, I mean by a long continu'd maceration of the human heart. For with the water, when often renew'd, many ſhreds of membranes and fibrillæ, which the water has gradually diſjoin'd, are thrown away.

However, there is no more general cauſe of the body being made deſtitute of blood and humours, and growing lean, than the tranſit of the chyle thro' the meſentery being made more difficult, whether this difficulty be in the ultimate glands of the meſentery, or in the firſt, or promiſcuouſly in many of them, at the ſame time. An example of the former difficulty you will have from Cowper (*t*), who, in a young heifer that was very lean in her whole body, found two of thoſe glands which compreſs'd the receptaculum chyli by their tumour. And an example of the ſecond difficulty will be given by the celebrated Fantonus (*u*), who, in a man that had been confin'd for many months by a ſlow fever, found chyle only in the *vaſa lactea primi generis*, being retarded, for inſtance, by the obſtruction of the glands, to which thoſe veſſels were carried. And many obſervations of the third difficulty will occur, which you may add, together with thoſe two, to the Sepulchretum.

For even not a few are to be found, merely in the volumes of the Cæſarean Academy, that have been publiſh'd ſince the laſt edition of the Sepulchretum; that is to ſay, "of the meſenteric glands being totally obſtructed "and ſwell'd (*x*); of all the glands of the meſentery being ſtuff'd up, toge- "ther with the pancreas (*y*); of the meſentery being fill'd with tumid "glands (*z*); of the meſentery being every where crowded with ſcirrhous "glands (*a*); of the chylous veſſels being here and there obſtructed (*b*);" and theſe obſervations were made upon bodies that had been affected with "an atrophy; a hectic fever; on one that was wholly emaciated; on one re- "duc'd to extreme leanneſs, which follow'd a ſlow hectic fever." And indeed, when you twice read, that in an atrophy the meſentery was fill'd (*c*), and render'd unſightly (*d*), "with innumerable ſteatomatous tumours;" you will ſcarcely doubt, in both caſes, but the glands had been chang'd into thoſe tumours from the ſtagnating chyle; not to ſay any thing of the meſentery being found fill'd, after "a ſlow fever, with little abſceſſes and ulcers, "and that univerſally (*e*)." But if you chooſe to think differently, even with my conſent, and not ſuppoſe the ſeat of thoſe tumours or abſceſſes to have been in theſe glands; yet in ſo great a number of both of them it could not but happen, that many of the glands, and a great number of the veſſels that tranſport the chyle, muſt have been compreſs'd, and the tranſit of this fluid, in great meaſure, prohibited; as in the obſervation alſo of the celebrated Phil. Conr. Fabricius (*f*), a tumour "equal in magnitude to ſome

(*s*) De Mot. Cord. Propoſ. 53.
(*t*) Vid. Act. Erud. Lipſ. A. 1699. M. Feb. ad Tab. Cowperi 34.
(*u*) Anat. corp. hum. Diſſ. 5.
(*x*) Dec. 3. A. 9. & 10. Obſ. 218.
(*y*) Cent. 3. & 4. Obſ. 119.
(*z*) Act. Tom. 1. Obſ. 59.
(*a*) Eorund. Tom. 4. Obſ. 146.
(*b*) Eorund. Tom. 8. Obſ. 125.
(*c*) Cent. 6. Obſ. 16.
(*d*) Dec. 3. A. 9. & 10. Obſ. 214.
(*e*) Dec. ead. A. 3. Obſ. 139.
(*f*) Progr. quo Obſerv. in 3. cadaverib. verſ. fin.

"fiſts,

" fists, and scirrhous," could not exist " in the center of the mesentery " of an infant, who died of an atrophy, without pressing upon the *vasa chylifera ultimi generis*. And indeed that very experienc'd anatomist (*g*) has, in another place, the dissection of a woman, who died of a " slow wasting of " flesh," all of whose viscera show'd no unusual appearance, except that " the glands of the mesentery had entirely disappear'd." But he has immediately subjoin'd, that in bodies of this kind, " unless they are carried off " by a very advanc'd old age," (from which this woman was far distant) " these glands, if not altogether scirrhous, are nevertheless, for the most " part, found to be remarkably tumid." And when they are entirely lost, is not the passage of the chyle retarded by this means also; which passage, if they administer thereto by no other means, they are useful in promoting, by diluting with the addition of the lymph at least? And as, when these glands are diminish'd, this lymph is diminish'd also, may we not, in some measure, ascribe the emaciated state of most old men to this cause also, among others? However this may be, as it is certain that these glands do, for the most part, decrease in old men; if in the old man, whose history I have given you, they were not so small as they generally are; it is very probable that this had happen'd on account of their obstruction; and that for this reason, the passage of the chyle being become difficult, the body had sunk away in a marasmus.

20. There is on the other hand, to go on to another kind of fevers, when we wish the bodies of those who labour under fevers to be, in some measure, collaps'd; that is to say, by the quantity or turgescency of the vitiated humours being diminished. And this, I remember, was desir'd by the physicians who were my preceptors, in the case of a virgin at Bologna, in particular; as well as at other times; and that not rarely neither, by all who do not neglect the aphorisms of Hippocrates (*h*). For this virgin having fall'n into sweats during an acute fever, the acuteness of the fever, indeed, soon went off, but not the fever; of which she did not get entirely rid for more than a hundred days afterwards. However, as the fever did not go off in so long a time, so the face of the patient did not fall much, but continu'd full, and never pallid. Therefore, when the fever seem'd to be, at length, gone, and the virgin had got up from her bed, behold the fever again discover'd itself, as they had expected; and that not slight, nor of few days continuance; till it at last went off, together with that fullness of body, so as to return no more.

I would not, however, from the narration of this case; wherein that sweat may seem to have been of less advantage in taking off the acuteness of the fever, than injurious in producing the fever for so long a time; I would not, I say, have you believe that I am in the number of those who are even more averse to sweats, in increas'd fevers, than, a little before the time we are speaking of, those physicians were to stools, who had frequently observ'd patients of this kind to have been carried off in a miserable manner, from having taken purging medicines. Without doubt nothing is more natural for men, than to avoid one extreme error, and run immediately into another.

(*g*) Propemptic. ad Differt. J. B. Hoffm. (*h*) Vid. 38. Aph. Sect. 2.

Different regions, different ſeaſons of the year, different ages, different degrees of ſtrength, different conditions of bodies, diſeaſes, and cauſes, require different treatments. But ſcarcely any bear violent medicines without danger; and much leſs if the matter is crude; or, if concocted, it is not drawn to that part "where nature moſt inclines," to uſe the words of Hippocrates (*i*), "through the paſſages that collect it together."

Yet nature does not incline to the ſame place always, nor in all caſes; but to different places at different times; as, for inſtance, to the kidnies, to the inteſtines, to the ſkin. And that nature does verge to the ſkin, and cures the moſt violent diſorders by ſweats frequently; and among theſe fevers, although that moſt ancient maſter (*k*) had not expreſsly taught it, I nevertheleſs believ'd that no phyſicians could be ignorant. However, the flying from one extreme carries even ſome of the moſt learned men ſo far, as to aſſert, that they cannot find examples of critical ſweats, even in Hippocrates himſelf, in whom Malpighi (*l*) had pointed out ſo many unſucceſsful examples of ſtools. But theſe gentlemen have been ſufficiently anſwered by the celebrated Haller (*m*).

And others, though they do not aſſert the ſame thing, nevertheleſs make ſuch objections to thoſe who endeavour to excite ſweats, as may make the phyſician fearful, who ſtudies opportunely and cautiouſly, that is mildly, to aſſiſt nature; which is a little ſluggiſh indeed, but evidently inclining to the ſkin: as if, truly, almoſt the ſame objections might not, with juſtice, be made againſt purging, which they ſo much recommend. Others are, moreover, made averſe to ſweating remedies, by this conſideration, that the firſt uſe of ſudorifics began, as they themſelves ſay, among the Arabians. So the moſt advantageous uſe of the Peruvian bark firſt began among the Americans: nor are all the inventions of the Arabian phyſicians to be diſcommended. And certainly they were not Arabian phyſicians, from whom Pliny, in ſo many places of his natural hiſtory, has taken the account of roots, ſeeds, herbs, or other things, which were uſeful in exciting ſweats.

Nor was Andromachus an Arabian: yet from him Galen (*n*) has deſcrib'd an antidote, which was even given to perſons who had fevers, "and power-"fully excited ſweat:" nor did Oribaſius (*o*), nor Aetius (*p*), nor Paulus (*q*), come from an Arabian, but from a Grecian ſchool; yet not one of them has omitted to take notice of medicines, by the taking of which internally, ſweats may be excited: and, indeed, the two laſt have written a chapter expreſsly upon ſudorific remedies. Yet I do not ſay theſe things, becauſe I think that they are not equally known to the ſame learned men as to me; but in order to ſhow you, that, by reaſon of a too great forwardneſs to diſapprove ſome certain remedies, it now and then happens, that we ſeem to be quite forgetful of thoſe things whereof we are very well inform'd.

(*i*) Sect. 1. Aph. 21. (*k*) Sect. 4. Aph. 36.
(*l*) Reſp. ad Lipar.
(*m*) in Boerh. Prælect. ad Inſtit. §. 425. not. p.
(*n*) De Compoſ. medicam. ſec. loca l. 8. c. 7.
(*o*) Medic. Collect. l. 8. c. 17. & de Virt. Simpl. ubi de Calamintha.
(*p*) Medic. tetrabib. l. 1. Serm. 1. ubi de ead. & Serm. 3. c. 48. & 157.
(*q*) De Re Med. l. 1. c. 48.

21. It

21. It is, therefore, the buſineſs of a prudent phyſician, in epidemical conſtitutions of fevers, to adhere obſtinately to no prejudg'd opinion; but to obſerve attentively, of himſelf, where nature inclines; and not to conclude from one obſervation, or accidental cure, what ought to be done in other caſes. I have ſeen a woman labouring under a continual fever, who, after blood being taken from her arm, in which I remember there was but little ſerum, was immediately ſeiz'd with a much more violent fever, like an acceſſion, or paroxyſm; which had hitherto been unuſual. And, indeed, this was the true acceſſion of an intermittent, which was ſucceeded by another on the following day; and within four days the woman was freed from her fever. This acceſſion, therefore, which had at firſt ſeem'd dangerous, and immediately ſucceeded, in ſo violent a manner, to the loſs of blood, prov'd to be ſalubrious: for the fever, from a continual one, became an intermittent; which went away of itſelf eaſily and ſoon. But that change was fortuitous, and would even have come on without any loſs of blood. There is no occaſion to add other examples, that are frequently met with in the practice of phyſic, in order to ſhew you the intention of what I aſſert.

However, not only in the event of fevers, but alſo in the prognoſtic indications of the event, thoſe which accidentally indicate, ought to be diſtinguiſh'd from thoſe that do not accidentally indicate. Among the latter, the common people gladly place even puſtules and little ulcers, which happen about the lips; and, perhaps, not without reaſon. For Albertini alſo (*r*) confeſs'd that theſe were the marks, or tokens, of *criſes*, "which follow "after;" and I have, more than once, obſerv'd that the event anſwer'd our expectation: although, at the ſame time, I remember that, in a very bad continual fever, our hopes were diſappointed; notwithſtanding they appear'd of themſelves, not "after a fright," and on the fourteenth day of the diſeaſe, and "urine was at the ſame time diſcharg'd with ſome little heat:" and why I have made theſe remarks you will eaſily know, if you inſpect ſome certain places of the *Commercium Litterarium* (*s*), which relate to theſe little ulcers or puſtules of the lips. Yet in regard to this ſign, I have not ſo many obſervations as I would wiſh.

But another ſign, which I had begun to obſerve by chance, as frequently is the caſe, has very rarely happen'd to fail, in a very great number of obſervations: I mean a ſign taken from the inſpection of the urine. For I continu'd the more attentively, and frequently, to attend to it, from the time I lit on two paſſages of eminent phyſicians; which you will ſee transferr'd into this ſection of the Sepulchretum (*t*), although for ſome other reaſon; I mean of Joubertus and Gradius: Joubertus, I ſay, for the words which are copied there, as if from Schneider, are not the words of that author, but of Joubertus, who is expreſsly quoted by him in his treatiſe on the gout, in the firſt book and ſixth chapter; in which manner Schneider ought to have been quoted; and not "in the chapter on the gout:" and in another place, at leaſt, of the Sepulchretum (*u*), where I have obſerv'd that the greateſt part

(*r*) in Opuſc. de Cort. Peruv. Tom. 1. Comment. de Bonon. Sc. Inſtit.
(*s*) A. 1745. Hebd. 31. & A. 1739. Hebd. 28.
(*t*) Obſ. 40. & Schol.
(*u*) l. 3. Sect. 25. in Schol. ad Obſ. 14.

of

of a certain ſcholium is taken from Schenck (*x*), thoſe words are attributed to Joubertus. This author, then, has aſſerted, " that in many patients who " have fevers, (and eſpecially when the diſorder has been brought to a criſis) " ſmall ſandy particles are copiouſly diſcharg'd with the urine; without any " nephritis being preſent, or having preceded." And Gradius had formerly taught, that ſand " appears in the decline of fevers, and after long fevers;" but that they are eaſily diſtinguiſh'd from thoſe which prove the exiſtence of calculi; " becauſe if they are compreſs'd and rubb'd betwixt the fingers, " they are readily diſſolv'd."

Moreover, I have not only in fevers, whether they were vernal or autumnal, in ſummer or in winter; whether intermittent or continual; whether benign or malignant, or join'd with petechiæ, or of a middle nature betwixt them; or ſometimes very ſlight, long or ſhort; whether in children or young men; whether in men or women, and theſe ſome of them pregnant; or, finally, whether in thoſe that have their origin from more frequent, or more ſingular cauſes; as for inſtance, from a corroſive poiſon being accidentally, or purpoſely, taken; I have not only, I ſay, in fevers, but alſo in ſome other diſorders disjoin'd from fevers, and particularly in ſevere pains of the head, and ſome apoplectic affections, ſometimes even in thoſe of old perſons, obſerv'd, that as often as theſe ſandy particles appear'd, the fever was in fact either at an end, or very near to an end: but not unfrequently when it had not as yet begun to decline, or if it had begun, when it did not go on ſo evidently to decline as not to leave the event ſtill more doubtful than I would wiſh.

And as in the end of the diſeaſe, or in the decline, that is already certain, and becoming more conſiderable every day, they have confirm'd the victory of nature; ſo before the beginning of the decline, or in a decline, which is ſtill doubtful, they have, for the moſt part, portended the ſame victory: for either the diſeaſe has happily gone off altogether, or if a relapſe has follow'd, it has been ſo much the ſlighter and ſhorter. Once only, as I have already told you (*y*), to a dropſy, which had follow'd a fever, and gone off, other violent and not very ſhort diſorders, but thoſe alſo of ſuch a kind that the patient recover'd from them, ſucceeded. But once, in all, the death of a patient was the conſequence of an autumnal malignant fever; which patient I never ſaw either before or after that one day; ſo that whether he was taken off by the fever, or by ſome error committed afterwards by himſelf, thoſe who were about him, or by the phyſician, I do not certainly know; nor yet whether thoſe ſandy particles had been obſerv'd during the whole time of the diſeaſe, or had appear'd on that day for the firſt time.

Nor do I ſpeak of thoſe which appear always, but of thoſe which begin to diſcover themſelves only when the vigour of the diſeaſe is approaching near to a decline, or when the decline is already begun, and " adhere to the " ſurface of the urinal," as Gradius ſays (*z*); not " of the urine," as you will read it falſely copied in the Sepulchretum (*a*); where not even the book

(*x*) Obſ. Medic. l. 3. ubi de Ren. Symp- Obſ. 5.

(*y*) Epiſt. 8. n. 10.

(*z*) Prax. in Non. Almanſor. tr. 3. c. 14.

(*a*) in Schol. cit.

in

in which he has ſaid theſe things is pointed out. That is to ſay, looking at the urine in a very clear light, you will obſerve thin ſandy particles adhering to the ſides of the glaſs chamber-pot, and ſometimes ſwimming on the ſurface at the ſame time, reddiſh for the moſt part, whitiſh very ſeldom; ſuch as I remember to have ſeen in a certain young man, when a fever that was malignant, and attended with petechiæ, began to decline.

22. What I have mention'd of this young man, brings back to my mind, that the blood, which in his diſorder was taken away at four different times, at one time by the lancet, and at another by cupping-glaſſes; beſides that it was more fluid than it ought to be, or had its craſſamentum very ſoft; had, at the three laſt times of being taken away, the coagulum ſurrounded with a ſerum, which was of a white colour, as if from chyle being mix'd with it. Which I ſhould not have taken notice of, if I had ſeen it in a perſon who was well-nouriſh'd; as I have at other times, and at a certain hour after taking food.

But in the following month, the blood which was taken away from another young man alſo, on the third, and again on the fifth, day of the diſeaſe, ſhow'd at both times a whitiſh ſerum, in ſmall quantity indeed, and even in all only a few drops on the third day; while the craſſamentum was hard, and cover'd over with a cruſt of a moderate thickneſs: whereas on the fifth day, the coagulum was ſofter than it ought to be, and cover'd over with a cruſt not leſs thick than itſelf; not being hard however, but ſo tenacious, and reſiſting diviſion, that you could ſcarcely cut it with a knife. Yet this ſecond young man labour'd under a fever, which rather inclin'd to malignity, than was really malignant; being not only much ſhorter than that former, but more ſlight, and without danger. However, in thoſe malignant fevers wherein theſe ſandy particles appear'd, I neither ſaw a whitiſh ſerum nor a very ſoft craſſamentum; but even this laſt ſometimes more hard than it naturally is; and I even ſaw it very hard in one perſon, in whom it us'd to be very ſoft at other times.

I remember beſides, that when two phyſicians of this college, of whom I was one, were conſulted by order of the ſupreme magiſtrate of Venice, upon peſtilential fevers that rag'd in that part of the territories of Padua which is about Montaneana, (for ſo ſome call it now, though Peter Bembo (*b*) call'd it Montanianum) we were inform'd, that although in the beginning the blood of the patients was, for the moſt part, diſſolv'd in too great a degree, and at that time appear'd to be too much coagulated; yet, in both times of that conſtitution, the petechiæ had diſcover'd themſelves; and even at this time, if any perſons happen'd to have the blood diſſolv'd, theſe had the petechiæ produc'd in the ſame manner as the others: ſo that it was natural to conceive of this malignant power, (which the communication of the diſorder by contagion ſhow'd to conſiſt in a very ſmall quantity of ſubtle matter) ſince it operated in one and the ſame conſtitution of air at the ſame place and time, as being in fact one and the ſame; but that the blood being in a different diſpoſition or ſtate in different perſons, appear'd to be differently vitiated in different perſons.

(*b*) Rerum Venetar. Hiſtor. l. 9. & l. 10.

And as the evident vitiated ſtate of the blood was different in different perſons, or brought on ſome ſymptoms differently in different perſons; ſo it plainly appear'd, that either different remedies, or a different uſe of the ſame remedies, were requir'd in different caſes; yet that there were both ſome ſymptoms, and ſome remedies, which were common to all, although the former were much more known than the latter: for who would believe that he could, in any meaſure, conjecture the peculiar nature of that malignant power, or energy, by which every one was infected, except from thoſe things that were obſerv'd to be commonly advantageous or hurtful to all? And even if theſe fevers were not altogether peſtilential, could any one think here, with a celebrated writer in the medical ſcience, that the ſtrength of the patients was not overwhelm'd by the malignant influence, but by the quantity of blood, ſince ſuch cauſes had preceded as tend to diminiſh rather than increaſe it; and experiments, which had been more than ſufficiently repeated, ſhow'd blood-letting to be pernicious.

23. It is, therefore, natural to ſuppoſe, that with the malignant power is join'd a ſolution or coagulation of the blood; but that the malignity does not conſiſt in either of theſe qualities, eſpecially as we ſee one or the other of them in ſo many diſorders which are not malignant. However, where either the one or the other is very conſiderable, and has ſymptoms join'd to it by which the malignity is ſhown; as, in particular, a ſpeedy and very great proſtration of ſtrength and vital power, which can neither be attributed to evident foregoing cauſes, nor to an exceſſive quantity of overwhelming blood; this quality alſo, as one that is very frequently join'd with malignity, and adds violent ſymptoms likewiſe thereto, will, in ſome meaſure, be a proof of this malignity; as you will find in many obſervations, and even in that which I ſhall ſubjoin from our Mediavia.

24. A woman, of fifty years of age, being very evidently ſeiz'd with a malignant fever, was brought into the hoſpital. Her pulſe on the ſix firſt days was very ſmall and obſcure, though it ſeem'd afterwards to be a little more lively. But a very great ſtreightneſs in reſpiration, and a palpitation of the heart, coming on, the woman was carried off thereby within the ſpace of two days.

The thorax, therefore, only being open'd, the blood was found to be half-concreted in the left ventricle of the heart; and in the right, it was not only ſo collected together as to diſtend that cavity, but the whole of it was ſo crowded together into a polypous concretion, that although this ſeem'd to be fleſhy, when you look'd at it, it nevertheleſs reſiſted the knife when you attempted to cut it, in the ſame manner as the moſt tenacious and viſcid cruſt that gathers upon the blood of pleuritic patients.

25. If you happen to aſk me whether acids, as the ſame perſons imagine, bring on the cauſe of concretion, or, as is more commonly ſaid, of coagulation, in the blood; or whether, although ſome acids bring it on, all of them are capable of bringing it on, as it ſeems to others they are not, or of continuing to produce it; I ſhall ſay, that there may be other cauſes beſides acids from whence the blood may coagulate, and ſhall, at the ſame time, add ſome of my obſervations, which were made with attention, and cloſe inſpection, upon the blood that had been taken from patients by venæſection.

And,

And, firſt, although I have lit, more than once, upon blood which exhal'd a kind of nauſeous and acid odour, and, if I may ſo ſpeak, a kind of vague acid, or *acidum ſylveſtre*; it never happen'd, though I have been oblig'd to let blood in many malignant diſorders, that I found any thing of an acid odour in that blood. But I found it in a woman who was affected with a continual ſummer-fever, and in a man in like manner, and in a boy of ſix years old, who were troubled with vernal intermittent tertians, of a mild nature like the former, in different years, in all of whom, for ſome reaſon or other, it was neceſſary to open a vein.

In the boy, indeed, the craſſamentum was hard, and had very little ſerum: it was moderately firm in that woman and in the man; and in the latter with rather a little ſerum, and that of a yellowiſh colour. In which man it happen'd, that, though I had obſerv'd this odour on the fourth hour after blood-letting, ſeven hours after that I could ſcarcely perceive it; which was a pretty clear proof, that the cauſe of this conſiſted in particles which were more eaſily diſſipable than in the blood of the others, in which I perceiv'd it after ten or twelve hours in a ſtrong and vigorous ſtate. And not only in thoſe of whom I have ſpoken: for even where there was no fever, as in a ſevere and recurrent pain of the head, and in a ſcabies in like manner, there was the ſame odour of the blood, which abounded with a great quantity of ſerum around the craſſamentum, that was cover'd with a thin and tenacious cruſt. In him, however, who had the pain in his head, the craſſamentum was not ſo thick and black as in the ſcabious man; although both of them were ſcabious. But leſt you imagine that in all thoſe who are troubl'd with a ſcabies the blood emits an acid odour, I can aſſure you that it did not in others, and particularly not in a nobleman of the firſt rank, in whom a ſcaly diſorder, that had eroded the ſkin, was unadviſedly repell'd at that time, from which he ſuffer'd much, his blood having a very tender and diffluent craſſamentum beneath a very tough and thick cruſt. And, indeed, in the caſe of that ſame ſcabious patient whom I mention'd in the ſecond place, although he had blood taken away four times within five months, no acid odour proceeded therefrom more than once.

But let us now ſay no more of a diſorder of the blood of this kind, which is, as you ſee, not very rare, in order to conſider one much more rare, which was perceiv'd at Padua ten years ago, and not by the faculty of ſmelling, but of feeling.

26. Catherine B. the honeſt wife of her honeſt huſband Joſeph, being a woman of a middle ſtature, and of a ſanguineous temperament, ſo that her menſtrua had begun when ſhe was in her thirteenth year, and not in a ſmall quantity, and continu'd to flow in the ſame or in a larger quantity every month after, even when ſhe gave ſuck, and generated a great quantity of milk after her firſt and ſecond time of child-bearing; for ſhe brought forth twice; and notwithſtanding ſhe labour'd under an inflammatory fever every year afterwards, both in ſpring and autumn, and that for twelve years together; although ſhe often loſt blood on account of this fever; and even though the firſt of theſe fevers was ſucceeded by ſo great a hæmorrhage from the uterus, that being carried on beyond the eleventh day, it brought on a great weakneſs of the pulſe, that was alſo follow'd by a jaundice, which was

at length carried off after two months by a great diſcharge of urine: this woman, then; whoſe habit of body and general diſeaſes I have mention'd thus far, and am about to mention thoſe that follow'd, for the reaſons which I ſhall hint at when I have finiſh'd the narration; being in her nine-and-twentieth year, receiv'd the ſudden and unexpected news of a fatal accident having happen'd to her moſt dear brother; and though ſhe was in other reſpects of a fierce and intrepid mind, ſhe immediately ſwoon'd away.

On coming to herſelf again, ſhe perceiv'd that her menſtrua, which ſhe happen'd to have at that time, had been check'd; but on the next day ſhe ſaw them again, not having the ſame appearance as before however, but being like water in which freſh meat has been waſh'd: and diſcharges of this kind return'd at ſtated times afterwards, through the courſe of ſome months. For this reaſon blood was taken away more than once, and ſoon after often, in a very violent fever that came on, and was at length carried off by a ſweat. However, after theſe things the menſtrua return'd to their former nature; nor was a double tertian continual fever, which return'd every year in the ſpring-time, and that for the ſpace of ten years ſucceſſively, any obſtruction thereto, notwithſtanding this fever was not carried off but by repeated blood-letting, and the exhibition of the Peruvian bark.

After theſe ten years, ſhe was attack'd in the ſummer with fevers almoſt of the ſame kind; but with theſe ſhe was afflicted more ſeverely and more dangerouſly, becauſe they had violent pains of the whole belly join'd to them, and a uterine hæmorrhage, which was, for the moſt part, more increas'd when the pains were grown a little milder. Every method was made uſe of to counteract theſe ſymptoms, and, among others, blood-letting was ſix times repeated; and the ſerum of the blood was of a ſaffron colour, the craſſamentum hard, and cover'd over with a polypous cruſt. But although both the fever and thoſe ſymptoms were ſometimes diminiſh'd, and ſometimes, to all appearance, remov'd; yet an end was not put to them all, but by the *hæmorrhagia uteri* itſelf, which return'd in a greater quantity than ever on the forty-fifth day after the fevers had begun. Nevertheleſs, the patient ſoon grew well, and grew well in ſuch a manner, that, after the completion of five-and-thirty days from the laſt hæmorrhage, the menſes returning in a moderate and natural degree, and always continuing to flow at the proper time, ſhe paſs'd twenty months in extremely good health. But after that, in the ſummer of the year 1749, ſhe had frequently, by reaſon of a great thirſt, drunk a conſiderable quantity of water, without any uneaſineſs of the ſtomach, which ſhe could by no means bear in former years, even when ſhe had a fever; and in the autumn that follow'd, by reaſon of external cauſes which were very evident, and affected the body with fatigues, and the mind with anxiety, had been troubl'd with a nauſea of the ſtomach, watchings, pain of the head, and laſſitude; this ſymptom was added in the ſucceeding winter, that though her thorax and head were very hot, the belly and the lower limbs were cold, nor could be ſufficiently defended from the cold by clothes, or any other preſervative whatever; and, in like manner, that ſhe was ſeiz'd with a horror, which crept over her back after dinner, and ſtill more in the night-time, when ſhe turn'd herſelf from one ſide to the other: and, indeed, if ſhe got any ſleep, ſhe was awak'd by tremors and ſudden terrors; although

ſome

ſome diurnal terrors were not wanting, which, certainly, were the conſequences of a falſe imagination, through the effect of which ſhe every-now-and-then fell into a ſwoon.

From hence all the ſymptoms laſt ſpoken of were increas'd every day, a ſenſe of internal oppreſſion was troubleſome to her, and her head in particular became ſo heavy and ſubject to a vertigo, that the woman had need of a ſupport in order to prevent her from falling. She was then in her three-and fortieth year, when ſhe ſent for her phyſician, who was our Mediavia, and had been now for four years; and to him, on the ſeventh of May, in the year 1750, related all theſe things; and this, moreover, which in a woman of that kind is worthy of peculiar remark: that her menſtrua, which, as we learn from what has been ſaid above, had always been in a great quantity, and which in the laſt ſummer had not been diminiſh'd, although they flow'd twice in each month, and us'd to be pretty hot, and even extremely hot, had now not only begun to be diminiſh'd in their quantity, from the time ſhe had been thus affected, but had begun to be diſcharg'd in a cold ſtate, and, laſt of all, had even come away quite cold.

Upon hearing this account, the inteſtines, which in this patient had always been ſubject to coſtiveneſs, being immediately open'd in a mild manner, blood-letting was order'd; but the blood running down the arm ſlowly, and not coming forth with an impetus, a circumſtance which gave riſe to this my prolix narration, was obſerv'd by the patient, and at the ſame time by the ſurgeon, who was a man of approv'd credit and veracity, Daniel Faſolati, to the great aſtoniſhment of them both; I mean, that the blood, the violent heat of which not only the patient herſelf at other times, but the ſurgeons, when holding in their hands the glaſs-veſſel in which the blood was receiv'd, had been ſurpriz'd at, came forth now in ſuch a ſtate of coldneſs, that the patient complain'd of ice (for that was her expreſſion) flowing down upon the bending of her elbow; and the hand of the ſurgeon was affected with the coldneſs. The ſerum of this blood was in ſmall quantity, and of a yellow colour; the craſſamentum black and viſcid. And that which in the evening was taken from the foot, had the ſame kind of coldneſs, and almoſt the ſame nature.

As there was ſcarcely any advantage gain'd by this treatment, and by ſome medicines which are call'd cardiacs; the phyſician did not heſitate, and particularly in a woman of this kind, in order that the blood might be rous'd to a more briſk motion, to take ſome from the arm and from the foot at the ſame time, on the following day. And the ſucceſs correſponded to his wiſhes. For not only the blood was diſcharg'd in a leſs cold ſtate, but while it was diſcharg'd the woman ſaid that the ſenſe of oppreſſion was taken away; and a little fever coming on in the evening, in the night the inferior parts, which had always been cold and ſtiff in the preceding months, grew a little warm; and in the morning the fever remitted, and ſoon after left the patient entirely. After this ſhe continu'd well ten days: the lower limbs being warm, and the pulſe, which had been before hard, ſmall, and low, and gave no reſiſtance to the compreſſion of the finger, being now chang'd for the better, in conſequence of the oppreſſion being remov'd; and the urine itſelf,

which had been before diſcharg'd, not only in a large quantity, but in a crude and limpid ſtate, returning now almoſt to its natural quantity and colour.

27. Now take the remainder of the narration; for I do not think it ſufficient to have related what had preceded and accompanied an affection of the blood of that kind, except all things be taken notice of, or, at leaſt, down to a certain time. At the end of the tenth day, then, that part of the metatarſus of the left foot which anſwers to the great toe, was attack'd with a pain that was of very ſhort continuance indeed; ſo that, as it attack'd her once on the firſt day, and thirteen times on the following day, it recurr'd five times within half an hour, and went off in ſuch a manner, that, a little after, on the very ſame day, the woman could go from home almoſt without any inconvenience; except that, as ſhe was returning, ſhe fell down ſuddenly, without any external cauſe, on the right ſide, and did not riſe up without being aſſiſted by the hands of other perſons.

She, nevertheleſs, return'd home; and there the pain attack'd her, firſt, in a ſlight manner; but on the day following was ſo acute, together with a great fever, and ſo continual, as to trouble her the whole of that day, and not to go off without the adminiſtration of opium. On the next day ſhe was free both from pain and fever, ſo as to riſe up from her bed in a good ſtate of health. But on the ſucceeding day, ſhe was ſeiz'd with a violent convulſion of the cheſt and of the thorax. After that, ſhe was afflicted with a fever and pain, to which a very violent convulſion was added; theſe ſymptoms growing milder ſometimes, even to the ſpace of three days; but, at other times, perſevering, or growing ſtronger, in ſuch a manner, that it was ſcarcely in her power to draw her breath, and, finally, that her head was oppreſs'd by a deep ſleep.

From the time of that firſt convulſion the diſeaſe was contended with, for eleven days, at one time, by giving the freſh-drawn oil of ſweet almonds; at other times by antiſpaſmodic powders, of the ſame kind as thoſe that have their name from the marquis; ſometimes by cinnabar; ſometimes by opium, which in the middle courſe of the diſorder was left off, as it had been found to be of no effect when given to the quantity of two grains; and often by venæſection, that is to ſay, once in the arm, twice in the hand, three times in the foot; the laſt blood that was taken from thence having almoſt taken away both that ſleep and convulſion, leaving the fever behind: and this fever diſcover'd itſelf every morning by a thirſt, and was attended with a pain of the head and ſtomach, till it reach'd to its achme; theſe ſymptoms afterwards ceaſing, and the fever itſelf remitting to ſuch a degree, that in the evening ſcarcely any was left, and the patient ſlept well in the night. And after this fever had continu'd ſome days in the ſame manner, it was quite remov'd by the Peruvian bark, taken to the quantity of an ounce, divided into ſeveral doſes. Three years were paſs'd over from this time without any inconvenience that was worthy of remark. But afterwards, the pains, fevers, convulſions, and other ſymptoms of that kind, return'd, though always ſlighter than the former, and more eaſily giving way to large blood-lettings.

And to theſe things, which had now been committed to writing a long time before, I thought proper to add the following, which I receiv'd by ſtrict enquiries

enquiries from the ſame woman, about the beginning of the year 1760, when theſe letters were copied: That, in the year 1758, which was the fifty-firſt of her age, ſhe at length began to be without her menſes, which to that time had continu'd to flow, not only very plentifully, but of a bright-red colour: nevertheleſs, that ſhe had been very well, and was ſtill ſo, except that ſhe had an almoſt continual ſenſation of ice, as it were, in her belly; and as this aſcended from thence to the cheſt, it brought on ſuch a difficulty of reſpiration, that ſhe was immediately oblig'd to loſe blood, and that to a conſiderable quantity. Nor is ſtrength wanting to bear this, as the woman ſtill preſerves both a good habit of body, and a good colour of countenance.

28. You have here the whole hiſtory of an affection of the blood, which is not leſs to be wonder'd at than what you read in Lower (*c*), of this fluid being almoſt wholly effus'd by a very great hæmorrhage, and at the ſame time reſtor'd by taking plentifully of broths now and then, and at length being diſcharg'd in a ſtate more ſimilar to broth than to blood; the man not only living, but perfectly recovering: you have, I ſay, the whole hiſtory, from the medical journal of our Mediavia, given in a prolix manner indeed by me, but, as I apprehend, not without ſome utility; ſince in proportion as things of this kind are more difficult to be explain'd, we ought to endeavour ſo much the more that no part of the hiſtory be unſupplied to thoſe who may undertake to explain it, contrary to what is generally the caſe in other obſervations of this kind that I have hitherto lit on.

For, to omit what our Spigelius (*d*) has ſaid "of thick and cold blood," which he ſaw coming forth from a vein that was open'd in perſons who had drunk cold water after being very hot, and not without difficulty, as he ſeems to ſuppoſe it to have been made more denſe and thick, within the adjacent great artery, from the cold of the œſophagus, rather than to have been actually cold; certainly the obſervation which was formerly propos'd in Riverius (*e*), of a woman very liable to anger, who died within the fifth day after blood-letting, we are ſo far from knowing what cauſes had preceded, or what ſymptoms accompanied that continual fever under which ſhe then labour'd, that Thomas Bartholin (*f*) was oblig'd to conjecture by a kind of divination, if I may be allow'd ſo to ſpeak, that a perpetual horror had accompanied this fever.

As to Peter Borelli (*g*), he thought it ſufficient to ſay, that a commander of horſe, "when he had a vein open'd in a diſeaſe, had diſcharg'd his blood "in a cold ſtate:" ſo that we are not even told under what diſeaſe he labour'd, or who had been witneſs to the circumſtance. And he likewiſe adds ſuch an explication of the phenomenon, that makes it ſeem ſurprizing, not that the ſame circumſtance had already happen'd ſometimes, but, rather, that it does not happen always, or much more frequently at leaſt. Finally, Gabriel Clauderus (*h*), producing another explication, according to which this circumſtance ought to happen always or generally, in the moſt violent apoplexies, ſays that he had obſerv'd the ſame thing as Riverius; that is, he had obſerv'd, in two matrons who were ſeiz'd with a violent apoplectic pa-

(*c*) Tract. de Corde, c. 2.
(*d*) De hum. corp. fabr. l. 6. c. 2.
(*e*) Obſc. communic. 46.
(*f*) Cent. 4. Epiſt. Med. 47.
(*g*) Cent. 2. Med. Phyſ. Obſ. 51.
(*h*) Eph. N. C. Dec. 2. A. 4. Obſ. 138.

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roxyſm, the blood, which flow'd from a vein that was open'd, to be cold, he having felt it ſo in his hand immediately upon its being diſcharg'd; yet that he had reſtor'd both of them to health, by applying, externally and internally, medicines that were loaded with volatile particles.

But from the vein of our woman the blood did not leap forth, but flow'd down ſlowly; ſo that Clauderus might have accommodated his explication, ſuch as it is, with ſomewhat more eaſe to this woman. The ſame author ſubjoins (*i*) obſervations of the blood dropping from the noſtrils in a cold ſtate, and of the urine being diſcharg'd in the ſame ſtate of coldneſs. But if it had happen'd that he had written later, he might have added others, not only of the urine being diſcharg'd in a frigid ſtate; as, for inſtance, by a ſoldier (*k*), and by a boy (*l*), both of whom were oppreſs'd with a malignant fever, the latter, moreover, being univerſally cold; and alſo of a fœtus being diſcharg'd in a cold ſtate, not only when already dead, and from a mother who was already cold, and who died ſoon after, that is, within an hour (*m*); but alſo of a living fœtus (*n*), and from a mother who liv'd, having "the moſt intenſe coldneſs" in its whole little body, and "a rigidity which "was quite unuſual, and almoſt like that of wood;" ſo that from its birth to the end of three days, during which time it liv'd, if it had not breath'd in the ſlighteſt degree imaginable, it would have been conſider'd by every one as a fœtus quite dead.

Nor would Clauderus have omitted the example of that illuſtrious woman (*o*), in whom, "for ſome days before death, the expiration had always "been extremely cold;" and after ſhe was dead, though both lobes of the lungs had "ſcirrhi and vomicæ in great plenty," the left was found to be "exceſſively cold to the touch, and like ice; yet ſuch a coldneſs as this "was not obſerv'd in the other lobe of the lungs, nor in any other part of "the body." But we will ſet aſide the conſideration of thoſe that were dead, or near to death, and will compare with our woman, who was herſelf preſerv'd, thoſe only that it was in the power of Clauderus to ſave, notwithſtanding cold blood diſtill'd from the noſtrils, or cold urine was diſcharg'd. And there is no doubt but in our patient the menſes had been diſcharg'd in a cold ſtate; although there is a conſiderable difference betwixt the blood which flows immediately from an open'd vein, and that which falls out by drops into the cavities of the noſtrils, or uterus, and vagina; and at length betwixt the blood immediately flowing from a vein, and a fluid which, after being ſecreted from the blood, flows down through a very long paſſage: ſo that it is ſomewhat leſs difficult to underſtand how theſe diſcharges could come away in a cold ſtate, than how the blood could be cold in a vein.

If the upper parts of the body had been cold in our patient, at that time, alſo, as well as the lower; it would, perhaps, have come into the mind of ſome perſon to reply, that, as the remaining part of the blood which flow'd through the internal parts of the viſcera was, by this means, ſufficiently warm and proper for the preſervation of life, that only which was carried through the external veins, and lay immediately under the ſkin, could be cool'd by

(*i*) Ibid. Obſ. 139, & 140.
(*k*) Earund. Dec. 3. A. 9. & 10. Obſ. 206.
(*l*) Act. N. C. Tom. 1. Obſ. 34.
(*m*) Eph. N. C. Dec. 3. A. 5, & 6. Obſ. 80.
(*n*) Earund. Cent. 9. Obſ. 30.
(*o*) Commerc. Litter. A. 1743. Heb. 21. n. 4.

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the coldneſs of the ſkin. But there is no room here for this explication, whatever its conſiſtency may be in other reſpects. For not only the upper parts were hot, but the woman would not have complain'd of the coldneſs of the blood which flow'd down, unleſs the ſkin had been leſs cold.

You then, as you are an ingenious enquirer, will conſider by what means it can happen, not only that the blood may ſometimes be ſuch as it is in fiſhes, but colder in living men, and men who are likely to live. But I, for whom it is ſufficient to have given you the hiſtory, with very great fidelity, and to have compar'd it with others, muſt go on to other things, which, although they are not of ſo ſurprizing a nature, this hiſtory has, nevertheleſs, brought back to my remembrance.

29. When I reſided at Bologna, a certain honeſt man was every day ſeiz'd with a coldneſs, which, although no heat follow'd it, one out of two phyſicians conſider'd as a fever; and the other, becauſe the patient fell down when ſeiz'd with that coldneſs, choſe rather to conſider in the light of a vertiginous diſorder. He was cur'd by the uſe of the carduus benedictus, and the ſpiritus ſalis ammoniaci.

I alſo remember that a woman, who was fifty years of age, and was taken into that hoſpital of St. Mary de Morte, was ſeiz'd every night at a certain hour, with a coldneſs and trembling, which continu'd till the morning, being attended with a pulſe which was ſomewhat more obſcure than uſual, but not more frequent, nor with any other inconvenience, nor yet follow'd by a febrile heat. And indeed her feet were continually cold, and often at other, though uncertain, hours, ſhe was likewiſe ſeiz'd with a ſhort coldneſs, trembling, and obſcurity of pulſe. The diſeaſe having been in this ſtate already for twenty days; by giving the Peruvian bark thoſe erratic rigors firſt of all diſappear'd, and the periodical remitted: at length the latter ceas'd to return alſo, and left the woman quite free from diſeaſe.

But theſe ſymptoms ſeem'd to me in fact to belong to a fever *ſui generis*. Other tremors, however, which were very ſimilar to febrile tremors, but not join'd with coldneſs, and ſtill leſs ſucceeded by any heat, and which I know to have attack'd a nobleman, a fellow-citizen of mine, every other night, I have referr'd to another place, and ſaw them remov'd, by a conſiderable quantity of urine being diſcharg'd ſpontaneouſly, and by a conſiderable diſcharge from the inteſtines, by the help of a mild medicine, without the uſe of this bark: although that ſome periodical affections, if they are febrile, are often diſſipated without this remedy, nobody is ignorant; and if they are not febrile, are ſometimes overcome thereby, as has been remark'd by many.

30. But that by the uſe of this bark (if you except ſome conſtitutions wherein it has ſeem'd not to anſwer ſo well) periodical fevers are put to flight with much greater certainty, if it be taken in the quantity, and at the time, that is proper, whether they intermit, or are already, from intermittents, become continual, and whether they are mild, or malignant and pernicious, I ſuppoſe is now well known, almoſt among all perſons; ſince even ſome of the phyſicians of this country, whom formerly fear, and I know not what kind of averſion to the bark, deterr'd from the uſe of it, might have been brought into a better opinion thereof, by the many happy and ſpeedy cures

which

which they have ſeen perform'd even by me, with the aſſiſtance thereof, many years ago; and thoſe alſo upon perſons of rank and figure.

But the notice of the proper time, in which this remedy ought to be exhibited, may ſometimes eſcape the phyſicians, not ſo much from their careleſſneſs in foreſeeing the danger at hand, as by chance; in the ſame manner that it happen'd in his eminence the cardinal Giovanni Franceſco Barbadici, whom the moſt pernicious febrile paroxyſm almoſt carried off, before it could be known that he was attack'd with a periodical fever.

The caſe is, of itſelf, certainly worthy of obſervation, and not only becauſe it happen'd in a man of eminence, whoſe laſt diſorder I have already deſcrib'd to you (*p*). For having ſhut himſelf into his chamber immediately after dinner, and not open'd the door at the uſual hour; the ſervants at firſt ſuſpecting nothing, except that he was detain'd, longer than uſual, by his holy prayers and meditations, or by reading, were quite unalarm'd; but afterwards, when it began to grow late, they ſuſpecting ſome diſorder, at firſt knock'd at the door gently, and after that, as nobody anſwer'd, more ſtrongly, but all to no purpoſe, though they call'd out to him at the ſame time; at length, getting in at the window, they found their maſter lying ſpeechleſs, without ſenſe, and without motion. A phyſician being immediately call'd, he found, beſides theſe diſorders, which however remitted more and more, convulſive ſtartings of the tendons. and a fever. And this fever alone continu'd, all the others having gone off of themſelves, within leſs than an hour.

The following day, in the morning, Valliſneri and I were call'd to the patient. We enquir'd of what nature, and from what cauſe, that very ſudden, and very violent, diſorder of yeſterday had been; which a fever, as it ſeem'd, had carried off. The phyſician told us, that not many days ago, an eryſipelas had appear'd in the patient's face. But that, probably, from the inclemencies of the air; for it was then the autumn of the year 1729, and the patient being more ſolicitous about his epiſcopal duties, than about his own health, would never confine himſelf to bed, nor keep himſelf within his chamber; it had been repell'd inwardly, and had ſuddenly diſappear'd. That he had ſeen only the termination of yeſterday's diſorder: and as to the manner of its attack, this even the patient himſelf did not know, as he had neither been ſenſible what had then happen'd to him, in thoſe many hours, nor remember'd any thing now, except that feeling himſelf cold, as if from the ſeaſon, he had gone to bed. The ſame things were confirm'd by the patient, whom we found, as uſual, in a chearful and attentive ſtate of mind, his fever now growing ſlighter and ſlighter, and there not being the leaſt trace of the ſymptoms he had undergone the day before. Although we doubted, for more reaſons than one, to what diſorder we ſhould, with propriety, refer theſe ſymptoms; yet that ſomething monſtrous was cheriſh'd within, not only the aphoriſm of Hippocrates (*q*), but reaſon itſelf alſo, did not ſuffer us to doubt.

In compliance with the one and the other, therefore, until ſome more clear

(*p*) Epiſt. 13. n. 3. (*q*) 25. Sect. 6.

light

light ſhould be thrown on the caſe, we readily granted, and aſſented to, the firſt phyſician's opinion, who was a man of eminence, and beyond a doubt experienc'd; I mean, that the matter of the eryſipelas ought to be again thrown outwards, in order to prevent its bringing on the ſame danger afreſh, which it ſeem'd to have brought on before; and this the phyſician had already attempted, by giving ſuch things as might propel the matter to the ſkin, without exciting any tumult in the conſtitution, and had made nature obedient to him ſo far, that a nocturnal ſweat, and ſome moiſture of the ſkin, at preſent, were the conſequences. And, indeed, in the whole of that day, there was nothing new that we could obſerve. But on the ſucceeding night, behold a febrile paroxyſm came on, which however, except ſome convulſive ſtartings of the tendons, ſhow'd nothing violent till noon. At which time, at length, either the ſame, or rather another acceſſion, produc'd ſuch a number of dreadful ſymptoms, that we were all ſent for immediately. We found the patient incapable of ſpeaking, and totally inſenſible, having a ſtertor, and a very difficult reſpiration, and being altogether like an apoplectic perſon, except that he was continually agitated by a *ſubſultus tendinum*, and had a very obſcure pulſe, which gave no reſiſtance to the finger, when preſs'd upon it.

Then, indeed, it was evident with what diſeaſe he had been ſeiz'd three days before, and that this was another acceſſion of a moſt dangerous tertian fever, which, as it anſwer'd to that firſt paroxyſm in the hour of its return, correſponded alſo therewith in its violence, and in the number of its ſymptoms, or, indeed, rather outſtripp'd it. Nor was there any hope of retarding the threatening danger, by what we could then apply only to the external parts, as all the terrible ſymptoms which we juſt now mention'd, grew ſtronger and ſtronger, before our eyes, and under our hands; ſo that, of all thoſe who ſaw the patient, and a great number of perſons did ſee him, there was not one who did not look upon it as certain, and pronounce it through the whole city, which was ſtruck with the unexpected diſorder of their excellent paſtor, that he would very ſoon die.

And although I was very much under the ſame apprehenſion; I, nevertheleſs, ſaid that ſome little hope remain'd, if this acceſſion, like the former, ſhould remit, if not at the ſame hour, by reaſon of its greater violence, at leaſt an hour or two later. I therefore enquir'd of my fellow-phyſicians, who departed about evening, as from a perſon that they totally deſpair'd of, whether, if the diſorder ſhould remit, they could ſuppoſe there was any objection to my giving the Peruvian bark; to which they anſwer'd that they ſhould readily aſſent, provided no blood ſhould, in the mean while, have begun to adhere obſtinately, either in the brain, or the lungs.

Within the firſt hours of the night I perceiv'd that the pulſe, by degrees, became not quite ſo bad; and that ſome ſweat appear'd: after that I found the patient come to himſelf by very ſlow degrees; and within that night, on which I would not return home, all the dangerous ſymptoms totally vaniſh'd: ſo that, early in the morning, the power of ſwallowing being reſtor'd, and the fever being brought to a proper remiſſion, there was now room for a remedy. And this I had previouſly order'd to be prepar'd, as I always do in very violent caſes of that kind, agreeably to the practice of the

moſt eminent phyſicians, from the ſame bark; yet not ſuch as the appearance of, only, recommended to the ſenſes by a mark that is ſometimes fallacious; but ſuch as it was certain intermittent fevers had been put to flight by the uſe of; and I gave half an ounce of it in the firſt draught: the remainder, which was three times the quantity, I diſtributed into much leſs parts; to be taken at proper intervals. And by this means I obtain'd my purpoſe of preventing the return of the paroxyſm; which would, without doubt, have carried off the patient; who was almoſt killed by the ſecond.

But even the ſecond would never have come on, if it had come into my mind to do the ſame thing in the remiſſion of the firſt. This, however, did not come into my mind; as we conſider'd only the eryſipetalous matter being thrown inwards, as it certainly was; and not the fever: for who could have gueſs'd that this fever had not follow'd thoſe very violent diſorders, as generally happens; but had preceded, and brought them on, and was periodical? as no one had ſeen the beginning of it; nor any fever of this kind had been obſerv'd at Padua at that time; although in thoſe days, as we afterwards learn'd, the ſame fever had been obſerv'd in a city not very diſtant, and had carried off an illuſtrious patient, in whom the uſe of the bark had been deferr'd for a fit or two. Wherefore you, for whoſe ſake I have given this long narration, if a caſe of that kind happen to you at any time, the beginning of which is unknown, although the cauſe may ſeem to be manifeſt; will by no means ſuffer yourſelf to omit enquiries into the nature of the fevers which prevail at that time; for it will not always happen to you, as it did to us, that it will be in your power to cure the patient, in whom you have let ſlip the remiſſion of ſo dangerous a paroxyſm.

31. Nor would I have you ſuppoſe that the patient, if he be not an old man, will be free from a fever of this kind, becauſe learned men have now thought proper to call it "the ſoporific intermittent fever of old men." For although it happens more frequently in that age, and the cardinal, of whom we have been juſt now ſpeaking, was more than ſeventy years of age; as alſo the noble count M. Antonio Trento, whom I had cur'd by the ſame remedy, when in the ſame ſtate of danger from a like fever five years before; and that without either of them, which is not ſo common, relapſing into the fever: yet Morton (*r*) has alſo deſcrib'd the caſe of a boy of ten years of age; and Torti (*s*) of a girl of a tender age; not to mention another who was not perfectly grown up to womanhood, and who labour'd under fevers which he call'd "lethargic."

I likewiſe would not have you be without fear of a ſoporific diſorder coming on in the future paroxyſms, or future parts of the paroxyſm, becauſe patients have paſs'd through the firſt paroxyſms, or the firſt part of any paroxyſm, without that profound ſleep. For although it frequently comes on before, and indeed long before, yet it now and then comes on at length in the ſeventh paroxyſm: and although it is in the firſt attack of the paroxyſm

(*r*) Pyretolog. Exerc. 1. c. 9. Hiſt. 25.

(*s*) Therapeut. Special. ad febr. period. pernic. l. 4. c. 3. Hiſt. 9. & 1.

that

that it generally comes on, as Sydenham alſo (*t*) ſhows; and that time, according to the diſſections made by Harvey (*u*) of thoſe who died in the beginning of the fit, is very convenient for the obſtruction of the blood: there are not wanting, nevertheleſs, examples of a deep ſleep coming on, not only at other times of the paroxyſm, which is not uncommon; but what is very rare, when the fever is declining; one of which kind you will ſee taken notice of in the Commercium Litterarium (*x*).

Here you will, perhaps, wiſh for ſome marks, whereby to judge, while the fever does not ſeem to differ from the mild kind, that this dangerous ſymptom is about to come on. And the ſame thing has been wiſh'd by others, no leſs than to know, whether any one had obſerv'd fevers of this kind before the year 1731. And they might eaſily have both their wiſhes fully completed, by the reading even of one author whom I have quoted; I mean Torti. For as he had transferr'd what was written before the end of the ſixteenth century by Ludovicus Mercatus; and again before the end of the ſeventeenth century by Richard Morton, upon dangerous intermittent fevers, into his celebrated Therapeutice (*y*), not without the addition of ſcholia; he has handled the ſubject in ſuch a manner, as to inform every one who reads his works, that Hippocrates, and many of the ancients, were not ignorant of intermittent fevers being ſometimes made malignant and deſtructive (*z*); and, at the ſame time, from what ſigns Mercatus has, in general, taught us to underſtand that theſe will be of a dangerous kind (*a*); but particularly to fear in thoſe whereof we ſpeak; leſt, "in the third or "fourth acceſſion, a deep ſleep, or ſome other of the ſoporific affections, "become perfectly eſſential to the fever (*b*)."

Nor, indeed, ought thoſe ſigns to be paſs'd by which Torti has propos'd, both in general and particular, from his own obſervation (*c*); and has confirm'd by the production of hiſtories, in their proper places, which relate not only to other kinds (*d*), but alſo to this we treat of now (*e*).

To theſe you will join the ſigns that are added by another illuſtrious phyſician in relation to this very kind (*f*). And you will ſee in Torti (*g*) this mark, among others, of a ſleep being about to come on ſoon, that the patient ſometimes ſtammers, and mutilates or clips his words, or ſpeaks one for another, "juſt as if he was troubl'd with a ſlight apoplexy degenerating into a "palſy of the tongue." There is, alſo, in the ſame author, the hiſtory of an old woman (*h*), in whom, as it had happen'd, in an exacerbation of a fever, not only that ſhe could not ſpeak her words properly, but that an evident kind of diſtortion of the mouth had come on; in the following exacerbation a deep ſleep, moreover, was added; and in the next to that an apoplexy, which paſs'd over into a paralyſis of the whole right ſide. And, that

(*t*) Epiſt. Reſponſ. de Morb. Epidem.
(*u*) Exercit. 1. de Mot. cord. & ſangu. c. 16.
(*x*) A. 1740. Hebd. 13. n. 2.
(*y*) L. 2.
(*z*) Ibid. c. 4. Schol. 1. & c. 8. Schol. 1.
(*a*) Ibid. c. 2. ante Schol. 3.
(*b*) Ibid. c. 3. ante Schol. 3.
(*c*) L. 3. c. 1.
(*d*) L. 4. c. 1. & 2.
(*e*) Ibid. c. 3.
(*f*) Vid. Commerc. Litter. A. 1733. Hebd. 52.
(*g*) L. 3. c. 1.
(*h*) L. 4. c. 4.

you may know theſe to have been from a fever, they were taken off by the uſe of the Peruvian bark.

You not only perceive what ſymptoms have ſometimes foretold ſleep, and after this an apoplexy; but you, at the ſame time, perceive, that this ſleep is rather of the apoplectic, than of the lethargic kind, eſpecially when join'd with that ſtertor which is wont to be join'd with the moſt violent apoplexy. And in conſideration of theſe things, Sydenham (*i*), and others, have aſſerted an attack of this kind, to be "altogether like a true apoplexy;" and Torti himſelf (*k*), that it at length becomes fatal, "like a ſtrong apoplexy," if not put a ſtop to by the bark; and Morton (*l*) ſays, that a boy, whom we have taken notice of above, was found twice by him "affected with a ſtertor "and other ſymptoms of a true apoplexy:" and he has related, that an old man, an uncle of his (*m*), who had been already, for many years, dull and ſleepy, was ſeiz'd with an "apoplexy" of the ſame kind; ſo that the attack remitting, he ſav'd both of them by giving the bark in large doſes.

But the calling to mind this dull, ſleepy, and moreover, fat old man, join'd with other hiſtories, and particularly with that which is deſcrib'd in the Commercium Litterarium (*n*), by a diligent, certainly, and ſkilful obſerver; I mean, of an old woman, who, having been afflicted a long time before with a ſtupor, and debility of one arm, and ſoon after with a heavineſs of her head, a frequent vertigo, and a great laſſitude of her legs, was ſeiz'd with a very profound ſleep, in the paroxyſms of an intermittent fever; theſe examples, I ſay, ought to make you ſolicitous leſt, in intermitting fevers, which trouble patients that are ſubject to theſe, or any other ſimilar diſorders of the head or nerves, they ſhould happen to be ſeiz'd with that terrible ſleep, or even with an apoplexy, without that ſleep having preceded.

For as examples are at hand, from the obſervator whom I have commended (*o*), "of an incurable apoplexy," and "of an apoplexy ſuddenly fatal," which follow'd this ſleep; ſo alſo we have others, wherein, "without any "ſoporific affection having preceded," an apoplexy has ſnatch'd away thoſe who were attack'd with intermittent fevers. Wherefore, when a patient ſhall be ſubject to thoſe diſorders of which we were ſpeaking; take care that you give him, in particular, the bark, as you would another, and in time; and take care likewiſe, that it may be retain'd by him for a proper time; for he whom I have ſpoken of, as being ſuddenly kill'd by an apoplexy, could by no means retain it. And this I was the more anxious about in Count Trento, who was affected with a kind of apoplectic ſleep, as has been ſaid, and, at the ſame time, with a ſlippery ſtate of the bowels, becauſe I knew very well that his own brother had been carried off, in former years, by a ſudden apoplexy. But in the remiſſion of the paroxyſm, I endeavour'd that the bark ſhould be retain'd, by mixing with it ſuch things as ſtrengthen the ſtomach and bowels; for I was afraid to make uſe even of the leaſt opium. And in this manner it pleas'd heaven to proſper my wiſhes.

32. I do not think you will be diſpleas'd, and I know for a certainty you

(*i*) Epiſt. Cit. (*k*) l. 3. c. 1. (*n*) A. 1738. Hebd. 33.
(*l*) Hiſt. 25. cit. (*o*) Commerc. Litter. A. 1731. Specim. 24.
(*m*) Hiſt. 26. n. 3. & A. 1734. Hebd. 13 poſt n. 2.

will

will not be ſurpriz'd, that inſtead of anatomical obſervations on thoſe who died of theſe fevers, I have produc'd obſervations made upon living bodies. For you know, not only that in the ſection which treats of fevers in the Sepulchretum, ſome hiſtories of this other kind are produc'd (*p*), but that it is my cuſtom particularly to avoid dangerous diſſections. For which reaſon, I ſuppoſe, you will be in leſs expectation of diſſections perform'd on thoſe bodies which were carried off by malignant fevers attended with the ſmall-pox, when you know that I have not, as yet, been ſeiz'd with the ſmall-pox. For I have not ſo much courage as Theodore Zwinger, who, as you will even read in the Sepulchretum (*), had never labour'd under that diſeaſe, and yet diſſected a boy who died of it.

But you will, perhaps, ſay, that the bodies even of thoſe who die of the plague itſelf, when diſſected, and eſpecially when cold, have been denied to be hurtful even by very learned men. It is true, I have read theſe authors; yet I have alſo obſerv'd what Thomas Bartholin (*q*), and Iſbrandus Diemerbroeck (*r*), who had read the ſame, have thought of it. For the firſt ſays, "I would not truſt too much to their reaſonings;" and the other, that a dead body, when it is, in fact, quite cold, is "much leſs contagious than a "living and morbid body;" but that it was contagious he did not deny; nay, even ſhow'd by his own example what he thought of it, when, although there was a perſon who promis'd to ſhow him (*s*) carbuncles in the ſtomach of a body of that kind, he ſaid, "That he did not care to diſturb a waſps-"neſt, and, by opening the cavity of the abdomen, expoſe himſelf to the "danger of contagion; and that he had rather believe it than ſee it:" and again (*t*), when he had related that it was demonſtrated by the ſurgeons in his preſence, that the exanthemata were continu'd very deep through the muſcles of the limbs, he ſays, "Whether the viſcera are affected in the "ſame manner, I have not ocular experience; for this reaſon, becauſe, al-"though I make but light of the contagion which ariſes from the diſſection "of the muſcles, I, nevertheleſs, believe that the contagion which ariſes "from the opening of the abdominal and thoracic cavities, may ruſh fu-"rioufly upon the by-ſtanders."

Do not be ſurpriz'd, then, that I chuſe rather to be in the number of the many, than in the number of "the very few," as he ſays (*u*), "who give "credit to thoſe that aſſert the carcaſes of ſuch as had been afflicted with "peſtilential diſorders, not to be contagious." And if they had not been very few who gave credit to them, do you think that, after ſo many peſtilences, there would have been ſo few obſervations from bodies that had died thereof, as are transferr'd into this ſection of the Sepulchretum? For they are very few indeed, if you take away thoſe that are put down from hear-ſay, thoſe which aſſert incredible things, and thoſe that are repeated; as, for inſtance, that which, after being ſet down under the third article of the ſixty-ſecond obſervation, is alſo put down again under the ſeventh article. And

(*p*) Append. ad Obſ. 10, & 29.
(*) In Additam. ad hanc Sect. Obſ. 19. cum Schol.
(*q*) Conſil. de Anat. Pract. n. 3.
(*r*) De Peſte l. 2. c. 3. adnot. 12.
(*s*) Ibid. l. 4. Hiſt. 15.
(*t*) Hiſt. 32.
(*u*) Hiſt. cit. 15.

leſt

leſt you ſhould ſuſpect that anatomiſts have been deterr'd from theſe diſſections by a vain fear, rather than by any juſt reaſons; pray read the arguments which are at the ſame time contraſted with the contrary ones, in the ſame authors, Bartholin (*x*) and Diemerbroeck (*y*).

Yet, if after reading them you are ſtill of opinion that there is no danger to fear; attend to what happen'd in this our theatre to thoſe who diſſected the bodies of perſons who died of a malignant fever only, and not of a peſtilential one, A *proſector*, who was young, ſtrong, and healthy, Stegagnoni by name, had ſo far diſſected a man who died of a petechial fever, as it is call'd, as to prepare the muſcles of the back, (truſting, perhaps, to Diemerbroeck, who made light of this) when he was ſeiz'd with the ſame fever, and taken from among the living. But this body might, perhaps, not be quite cold: that of an old woman, however, the belly of which was open'd by the celebrated Vulpius, in the year 1717, and in the month of January, was certainly cold both internally and externally; for I ſtood by him, in order to demonſtrate the ſituation of each viſcus to the auditors; and although no ill ſmell, more than uſual, appear'd, nor any mark of diſorder beſides an entangl'd ſtate of the inteſtines, yet I immediately felt a kind of unuſual languor, juſt as if I were about to fall into a ſwoon: and ſoon after, when the demonſtration was finiſh'd, we had ſcarcely return'd home, but we were both of us ſeiz'd, one in the ſame manner as the other, and at the ſame time, with a febrile horror and coldneſs, and after that with a febrile heat: and from that time, notwithſtanding the force of the fever was broken, I began to have but indifferent health for ſome years, in the manner I have ſaid in the dedication of the fourth of the Adverſaria. Nor is this to be wonder'd at: for although that woman had been brought into the hoſpital as an apoplectic patient, and really was ſo; yet that apoplexy had come on lately, during the courſe of a malignant fever under which ſhe labour'd at home, as was found upon enquiry afterwards.

You ſee, then, that in order to avoid the danger, it is not ſufficient to be cautious of diſſecting a body before it is cold: for they who have recommended this caution do not ſeem to have obſerv'd, that a body may be cold externally, but retain its heat internally; which, as you will perceive from my letters to you, happens very often; and ſometimes, even at the thirtieth hour after death (*z*), heat remains in the internal parts of the belly. Muſt we wait longer then? A putrefying body, they ſay, becomes "much more "contagious than a living morbid body." Nor would I have you object to me, that there have been, and ſtill are thoſe, who, without having regard to any of theſe cautions, have diſſected ſuch bodies with impunity. For the nature and force of all malignant fevers is not the ſame, nor the diſpoſition of all diſſecters the ſame; and as no one can, for a certainty, know the nature of either, who can deny but the advice of the more timid is ſafer than that of the more bold?

33. However, to return to myſelf, and to the ſmall-pox: when I was a very young man, and this diſorder happen'd to be very general, (and ſo mild as ſcarcely to have taken any off to that very day) being carried away

(*x*) N. 3. cit. (*y*) Adnot. 12. cit. (*z*) Epiſt. 3. n. 2.

with

with a desire of learning, I made no hesitation to attend an excellent physician in the hospital; and was not afraid even to feel the pulses of those who lay ill of the small-pox, much less to take notice of other circumstances, and enquire into still lighter matters; as, for instance, by what collyrium the skin upon the eye-lids, though in other parts almost universally rough and deform'd with pustules, was, nevertheless, kept smooth, clear, and beautiful; and I found that this collyrium was made of plantain water, in which a little of the saccharum saturni, as it is call'd, was dissolv'd. And while I was observing these things, it accidentally happen'd that one or two of these patients were carried off by death, though the physician very diligently did all in his power to prevent it.

Admonish'd by this instance, I determin'd never to attend patients of that kind afterwards, though sent for even to princes and men of the first rank. Nor do I think, though I have reach'd to this age, that I ought, by any means, knowingly to bring myself into danger; since I have known it happen, even to persons of eighty years of age, to be infected with the variolous contagion in the same manner as children, and to perish from thence much more easily than children, notwithstanding they had then believ'd themselves to be free from it; although in a very severe constitution of this kind at Forli, in the year 1749, an old woman, who was advanc'd beyond the age mention'd just now, and afflicted with that disease, escap'd with her life, which was certainly a rare instance of escape.

However, what it was not proper for me to do; I mean, to dissect the bodies of persons who died of that disease; has been done so many times, and by so many anatomists, that I cannot help being surpriz'd, men, in other respects very learned, should seem to be ignorant, that they would be wide of the truth, either who should contend that the variolous pustules never came in any other part but the skin, and particularly not in the intestines; or who should contend that they were always form'd in other parts.

You will naturally suppose, that the first class of these gentlemen had happen'd to light on such observations as that propos'd by Peyerus the son (*a*); and that the other lit on such as happen'd to agree with those which the celebrated Gunzius (*b*) takes notice of, as being made by himself; but that both, quite forgetful of all others, had concluded that every observation was similar to their own; whereas many which are even transferr'd into the Sepulchretum were extant, some of which very evidently agree with the former, and the others with the latter.

Besides, there are some, which you may collect from the dissertation of the celebrated Phil. Conr. Fabricius (*c*), to be added to both of them. And, moreover, as another dissertation (*d*), which was deliver'd under the auspices of Busserius the president, will give you an observation made on a certain prince, which agrees with the first of the above; so the volumes of the Cæsarean Academy (*e*) will furnish you with many that agree with the latter.

(*a*) Obs. Anat. 2.
(*b*) In Hippocr. de Humorib. not. 21.
(*c*) Exhib. Obs. circa Constit. Epid. A. 1750. not *b* ad § 19.
(*d*) Sist. Hist. morbi, & cadaver. variol. c. 1.
(*e*) Eph. Dec. 3. A. 7, & 8. Obs. 97. u m Schol. & Cent. 9. Obs. 52.

And

And, indeed, other hiſtories are not wanting, which deſcribe puſtules in various parts beſides the ſkin, and yet not in the inteſtines or other viſcera. Of which kind are thoſe that you read in the *Acta Hafnienſia* (*f*), in the Ephemerides of the Cæſarean Academy (*g*), in the pathological works of the moſt excellent Haller (*h*); and this, alſo, which I ſubjoin nearly in the ſame words wherein I formerly heard it from Jacob Sandri, who was one of my preceptors at the time when I reſided at Bologna, and a man of great learning.

34. A boy, of a noble family, who had but few puſtules of the ſmall-pox externally, and had no ſigns of others having beſet the viſcera, died like a ſuffocated perſon.

The body being open'd by Sandri himſelf, ſhow'd all the viſcera in a very ſound ſtate. But upon one of the muſcles of the larynx a variolous puſtule had been form'd, and about it the black colour of a gangrene now appear'd.

35. Moreover, that an internal gangrene is frequently join'd with other malignant fevers alſo; and even, if they are mortal, that inflammations of the viſcera then degenerate into gangrenes; will appear from obſervations that you will read in this ſection of the Sepulchretum. To which you may alſo join theſe: Our Sanctorius (*i*) ſays, "Some others have thought "that a malignant fever ariſes from a gangrene in the liver, or any other "viſcus; which I have obſerv'd in bodies more than once." Dominic Gagliardi (*k*) affirm'd, that in the diſſections of thoſe who periſh'd from a malignant fever, in whom the ulcers which had been open'd by corroding medicines call'd veſicatories, already began themſelves to be affected with a gangrene, "internal gangrenes were frequently ſeen." And Joſeph Lanzoni (*l*), in deſcribing an epidemical diſeaſe that rag'd at Ferrara in the year 1729, took notice, among other things, of "ſome livid ſpots in the coats of the "inteſtines," which appear'd upon opening the bodies of ſeveral perſons who had been carried off by this diſeaſe. And you yourſelf may add other examples which will not be wanting.

36. Now, before I make an end of writing, I will venture to ſay I do not ſuppoſe you will be ſurpriz'd; particularly as you were inform'd in the beginning, that I am not willing to repeat any thing which I have already written to you; I ſay, I do not ſuppoſe you will be ſurpriz'd that I have made no mention of ſome certain fevers in this place.

For you know that I have treated of the greater part of them, in treating of other diſorders. Some however, as, for inſtance, quintans, and thoſe that have longer intervals, I confeſs I have never nam'd; nor, indeed, have I ſeen any of them, except one which recurr'd exactly every week, in a nobleman, when I formerly liv'd at Bologna: nor can I ſay any thing of them, except that, although they generally ſucceed quartans, they are not, nevertheleſs, as has been done ſometimes, to be conſider'd as quartans that have their intervals render'd longer, unleſs we would ſtill conſider quartans, in like

(*f*) Tom. 1. P. 1. Obſ. 109.
(*g*) Dec. 3. A. 7, & 8. Obſ. 47.
(*h*) Obſ. 44. in fine.
(*i*) Comment. in I. Fen. I. 1. Avic. Qu. 86.
(*k*) Dell'Infermo inſtruito P. 2. Vegl. 30.
(*l*) Act. N. C. Tom. 2, Obſ. 209.

manner,

manner, when they ſucceed tertians, as tertians, whoſe returns are become ſlower than before; contrary to the opinion of all phyſicians from the moſt early times.

And this has been very clearly obſerv'd by my ingenious friend Zeviani (*m*), where he deſcribes the change of a quartan into a quintan, of a quintan into a tertian, and ſoon after, of a tertian into a quartan, and, finally, of a quartan into a ſextan; and this conſtant in a young girl that he had ſeen: of which laſt ſpecies of fever examples are extremely rare, as I do not remember ever to have read more than two beſides this; the one of Gentilis (*n*), and the other of Lanzonus (*o*). But what appearances have been found in thoſe who died after fevers of this kind, I am quite uninform'd. Yet when they are of long continuance, or ſucceed fevers of long continuance, it is probable that they leave behind them almoſt the ſame appearances as theſe generally do. And theſe fevers frequently produce diſorders of the meſentery, or the ſpleen, or ſome other neighbouring viſcus, and particularly of the liver. And you have an example in the celebrated Fantonus (*p*) of all theſe appearances being found at the ſame time.

In regard to the ſpleen, I have already ſufficiently ſhown this, in more places than one, but particularly in the thirty-ſixth letter (*q*), which you will find to agree with the obſervations transferr'd into this ſection of the Sepulchretum, where the queſtion is of quartans (*r*), and of long erratic fevers (*s*). You will alſo find examples relating to the liver in the ſame place. With which you will join what is ſaid, in the Commercium Litterarium (*t*), of the ſubſtance of the liver "cheriſhing the fomes of quartans in preference to "other parts;" and that, for this reaſon, "in many of thoſe who die of "quartans, it is at one time found to be injur'd, at another time dried up, and ſometimes inflated.

37. And thus far I had to add to the hiſtories of Valſalva upon moſt kinds of fevers, from my own obſervation, thoſe that I have read, or ſuch as have been communicated to me by others. And theſe I would have you receive, as uſual, in good part. Farewel.

(*m*) Nuovo Fonte di Pronoſtici P. 1.
(*n*) Apud Schenck. Obſ. Med. l. 6. ubi de raris febr. typis Obſ. 2.
(*o*) Eph. N. C. Cent. 8. Obſ. 10.
(*p*) De Obſ. Med. & Anat. Epiſt. 8. n. 10.
(*q*) N. 18.
(*r*) Sub Obſ. 30.
(*s*) Sub Obſ. 32.
(*t*) A. 1739. Hebd. 50.

LETTER the FIFTIETH

Treats of Tumours.

1. THOSE diſeaſes which moſt authors would certainly have plac'd immediately after fevers, the gout, the lues venerea, and others of that kind, Bonetus choſe to defer the conſideration of; and betwixt theſe and fevers to place tumours, wounds, ulcers, and others that relate to ſurgery. And as you know very well, how much this profeſſion was lov'd and cultivated by Valſalva, you perhaps expect a great number of obſervations; if not from me, whom you know not to be form'd, by nature, for the cutting of living bodies, as I am for that of dead bodies, yet at leaſt from him. And you will find, from the next letter, which will be upon the ſubject of wounds, that your opinion has not fail'd you. Nor indeed had he a few obſervations upon tumours.

But ſome he did not commit to paper; and others, though he did write them down, either he has himſelf publiſh'd, or I have deſcrib'd in former letters. All of which I will only refer to here, that you may read them over again if you pleaſe; as I will repeat nothing, whether it be his or mine. For although I ſhall here follow the order of the Sepulchretum alſo, ſuch as it is, according to my general cuſtom; yet I ſhall not follow the repetitions. Some of which are not only, like many others, not repetitions of thoſe obſervations that are openly declar'd to have been given in other ſections; but of thoſe that are put down again in this ſame ſection; as when, among thoſe that you read in the Additamenta, even the very firſt, with part of the ſubjoin'd ſcholium, had been already given above, in the ſixth obſervation (*a*), by Bonetus, who did not himſelf conceal the place from whence he had taken it; or when it happen'd to the ſame author, which is almoſt incredible, that, in one and the ſame page (*b*), he produc'd one and the ſame hiſtory, from Garnerus, twice over.

2. In regard, therefore, to bloody tumours, either thoſe which are commonly ſo call'd, or thoſe, in particular, that communicate with ſome trunk of a vein, (which are the ſame, in my opinion, that were afterwards nam'd "ſpurious varices," by Boerhaave (*c*)) what Valſalva ſaw of them, and what he thought, you read in the thirteenth of my anatomical epiſtles (*d*); and ſtill more in his treatiſe of the human ear (*e*); and in both places, in like

(*a*) §. 7.
(*b*) Obſ. 7. § 1. & 3.
(*c*) Prælect. ad Inſtit. § 711.
(*d*) n. 4.
(*e*) c. 4. n. 8.

manner

manner (*f*), thoſe things that relate to ſteotamata of the eye-lids. And I could wiſh he had given his opinion in as expreſs a manner, as to the nature of a certain tumour, of which he has left us the following deſcription.

3. A woman, of fifty years ofage, had labour'd, for three months, under a hard tumour, in the right part of the neck, being oblong in its figure, equal to the ſize of a turkey's egg, and having its baſis in the carotid artery of the ſame ſide, from whence going upwards, quite to the diviſion of that artery, it terminated there. At length, about twenty days before her death, it began to be very frequently troubleſome, eſpecially in that region of the larynx; ſo that ſhe was oblig'd to breathe with a peculiar kind of ſtertor, accompanied with a ſenſe of heat in the throat. The woman was therefore carried off.

I will not here, as I did in the caſe of another tumour, in the left part of the neck, which Valſalva deſcrib'd as being hard likewiſe, and without making mention of any pulſation (*g*), give you my conjecture upon the nature of it: you yourſelf will judge of it as you pleaſe. And I will go on to give you more certain remarks.

4. A virgin, of a lively diſpoſition, who, by reaſon of her age, being now advanc'd to about fifty, had been ſome years without her menſtrual purgations, had a cancerous tumour in her right ſide, near to the axilla. This tumour, by degrees, increas'd greatly in breadth and length, though but little in thickneſs, and, at length, reach'd to the arm-pit. The neighbouring limb was univerſally affected with an œdematous tumour. To this was added a cough, a ſpitting of catarrhous matter, a difficulty of breathing, a great thirſt, and finally death.

The tumour, as far as could be perceiv'd by the ſenſes, had not hurt the parts, whereon it was ſeated, to any conſiderable depth. In cutting into the neighbouring limb, a great quantity of ſerum flow'd out, all of which had ſtagnated in the cells of the adipoſe membrane. And the whole cavity of the thorax, on the ſame ſide, was fill'd with ſerum of that kind, having many concretions of the ſame colour ſwimming in it, of a middle nature betwixt membranous and gelatinous ſubſtance, many of which likewiſe adher'd to the pleura. The lungs were ſo contracted, that at firſt ſight they almoſt ſeem'd to be wanting as it were. The heart was very ſmall.

However, in regard to the belly, the fundus of the ſtomach was very much extended; the ſpleen was very ſmall; the liver inclin'd from its natural colour to that of a brown; the gall-bladder was ſmall and empty. The ovaria were white; and although they preſerv'd their natural figure and bulk, they had nevertheleſs grown very hard.

5. You will read an obſervation of Rondeletius (that is transferr'd into the Sepulchretum, not in this place, wherein it is not ſo much as mention'd, but in the ſecond book (*b*)) which is ſimilar to that in queſtion. For in both of them were an external cancerous tumour, a difficulty of breathing, and a great quantity of ſerum in the thorax: yet that this ſerum was collected, in that obſervation, during the decreaſe of the tumour; and in this, during

(*f*) Ibid. & noſtræ illius Epiſtolæ, n. 2. (*g*) Epiſt. 17. n. 19. & 20. (*b*) Sect. 1. Obſ. 72.

the increaſe, is ſhown by the time in which the difficulty of breathing came on. And this difference will make you explain the circumſtance ſomewhat differently in that obſervation, from what you would in this. And as what relates to the ſerous tumour of the arm is peculiar to this, ſo the cauſe of this tumour was peculiar alſo; I mean, the compreſſion of the axillary vein, from the cancer raiſing itſelf up thither.

6. But now let us come to other tumours of the upper or lower limbs, of a different kind, that have been obſerv'd by Valſalva, beginning with thoſe that have ſucceeded venæſection, when ill-perform'd. But I omit that which he ſaw in a noble matron from the puncture of a nerve or tendon, in blood-letting, her hand being greatly ſwell'd with the very ſevere pain, and, when that pain was appeas'd, continually trembling: which tremor continu'd not only after the ſwelling of the hand was abated, but even quite to the day in which he wrote this, that is to ſay, for five years together, no remedy being of any ſervice.

I, in like manner, omit that which happen'd to a young man, by an unſkilful ſurgeon's having pierc'd through the vein, in the bending of the elbow, the blood being internally effus'd in conſequence thereof; from whence afterwards aroſe an abſceſs of long and difficult cure.

I will rather deſcribe to you, with the more accuracy, the hiſtory of a tumour cur'd by the hand of Valſalva, becauſe it is a thing of greater moment, nor unworthy to be compar'd by you with the obſervations which relate what has been ſeen, done, or remark'd, in that part by others; as, for inſtance, by Rockius (*l*), by Petit the ſurgeon (*m*), by Teychmeyerus (*n*), and by thoſe whom I read while I was reviſing this letter, that celebrated phyſician Trew (*o*), and that induſtrious ſurgeon Guattanus (*p*), but eſpecially by the celebrated author of the diſſertation to be quoted below (*q*).

This obſervation, therefore, of Valſalva, although it may ſeem lame and imperfect in ſome things, as deſcrib'd in a looſe manner by a man who wrote for himſelf only; has, nevertheleſs, ſome things that deſerve peculiar attention, as one in particular does; I mean, that a cure of this kind was perform'd by Valſalva, before he had ſeen it perform'd by others; and that, as he was ſo ſkilful and induſtrious, he would have added other things at different times, if he had liv'd longer, and other opportunities of performing the ſame operation had occurr'd to him.

7. A ſurgeon, about eighteen years of age, loſing blood from the arm, on account of a diſorder of the thorax, had his artery wounded. The perſon who bled him, ſuppoſing that he had open'd the vein, tied the wound up in the ſame manner as if nothing but a vein had been cut into. After ſome days, a tumour was obſerv'd in the elbow; which, within twenty days, or ſomewhat more, encreas'd to the bigneſs of an apple. This a certain ſurgeon, ſuppoſing it to contain pus, cut into: and from the wound the blood began to flow, but without any impetus, in conſequence of the coagula of blood plugging it up, and entirely preventing the diſcharge.

(*l*) Comm. Litt. A. 1734. Hebd. 36. n. 2.
(*m*) Mem. de l'Acad. R. des Sc. A. 1735. & 1736.
(*n*) Diſſert. de ſtupendo Aneuryſm. & cæt.
(*o*) Act. N. C. Tom. 8. Obſ. 126.
(*p*) Hiſt. 2. Aneuryſm. Hiſt. 1. (*q*) n. 8.

But

But three days after, the blood, having made a way for itſelf, burſt forth: and that not only on this day, but on the two following days alſo; once only every day indeed, yet in ſuch a quantity as could not be reſtrain'd by any aſtringent remedies; and brought the patient into a kind of ſwooning ſtate. In the mean while, both the hand, and the elbow, and the neighbouring ſhoulder, almoſt quite to the middle, became ſwell'd: and an inflammation had already ariſen near to the incis'd tumour. In ſuch an extremity phyſicians were call'd, and thoſe ſuch as were well ſkill'd in ſurgery alſo; among whom was Valſalva; who, after having weigh'd the caſe accurately, began the cure in the following manner:

In the firſt place, he bound the upper arm with the bandage which they now call the torcular, or tourniquet, in ſuch a manner that it might be ſpeedily and eaſily relax'd upon occaſion. He then carried up the inciſion, which had been made by the ſurgeon, as I have ſaid, upon the tumour, towards the ſuperior parts, and in the uſual courſe of the artery. Thus the whole cavity of the tumour being laid open, which would almoſt have contain'd a man's fiſt, he drew out the blood, both fluid and coagulated, wherewith it was fill'd; and waſh'd the place very well with ſponges moiſten'd with warm wine. And this being done, he order'd the bandage to be relax'd a little; until the blood, flowing out, ſhould ſhow the ſituation of the wounded artery. This was in the fundus of the cavity; ſo that it was very inconvenient to tie up the artery, by reaſon of the depth. But having, at length, tied it immediately above the wound, the blood no more ſprang forth, even when the bandage was relax'd.

However, all the part of that limb, which was below this ligature made upon the artery, inſtantly loſt its power of feeling and motion; and a few hours after became quite cold: nor was a pulſe any longer perceiv'd. Yet this pulſe began to be perceiv'd again about the third day, from the time of making the ligature, though in a very ſmall degree: but about the fifth it had return'd almoſt to its natural impetus. In the latter part of this day blood was obſerv'd in the bed; and, for that reaſon, the bandages about the wound were ſeen to be wet. But when theſe were cautiouſly remov'd, and the wound examin'd, no blood was diſcharg'd; nor was there any ſign from whence it had been diſcharg'd. From this laſt eruption of blood the pulſe was again entirely loſt; juſt as if a new ligature had been thrown around the artery. But the limb, nevertheleſs, recover'd its natural heat, gradually, a few days after, and its motion alſo, though this laſt more ſlowly; for a weakneſs remain'd eight or nine months, and a kind of waſting, a brown colour of the nails, and a great proneneſs to be hurt by cold. After this period of time however, which I have mention'd, all theſe ſymptoms went off; and the pulſe return'd, though in a languid ſtate.

8. This hiſtory having been requeſted of me, by that celebrated man Peter Paul Molinelli, I immediately, and very readily, ſent it him; not only that I might oblige a man who excell'd in the medical and chirurgical art, and deſerv'd very well of me, but alſo that the hiſtory, which I ſent to him in an imperfect ſtate, he might, as having known the ſurgeon when living, and diſſected his body after death, make complete for me, as far as this was poſſible.

And

And this you will find to be extremely well done by him, if you read his diſſertation, which is entitled, " Of an aneuriſm from the artery of the arm " being wounded in letting blood." The chief things which he has added are the following: that Valſalva had applied not one ligature only round the artery, but many; being compell'd thereto by the difficulty of ſtopping the blood: that the man had afterwards liv'd in pretty good health; and did not die till about thirty years after this operation; when he was taken off by a conſumption and aſcites: and that he had been wont to make uſe of that arm which had been injur'd, juſt as he did the other, ſince you could now perceive no difference by comparing the two arms together, not ſo much as in the pulſe.

This is the more to be wonder'd at becauſe, in the diſſection of the body after death, although the brachial artery was entirely deficient, to the extent of two inches, in that part where the aneuriſm had been; that is to ſay, in conſequence of having been deſtroy'd formerly by diſeaſe, by the knife, and by abſceſs, or ſloughs; there could be found no artery but one which could keep up the communication inſtead of it, betwixt its ſuperior trunk, and the radial and ulnar arteries; and this was not only ſurprizingly tortuous, but ſo ſlender, that it was very difficult to conceive how the radial artery, as ſo little blood flow'd into it, and this blood was carried through ſo many flexures, could pulſate equally with the artery in the other arm; and, again, how it was that both arms were equally well nouriſh'd, and robuſt; or, at leaſt, equally fit for every kind of action.

Indeed that part of the nerve which lay in the ſame tract, wherein I have ſaid the brachial artery was wanting, was found to be enlarg'd into the form of a very conſiderable ganglion. But although you ſhould imagine that the ſtrength of the nerve might be encreas'd by this means; you, nevertheleſs, could not conceive of the proper ſtrength of the muſcles, the nutrition of the parts, and, particularly, the pulſation of the arteries, without a proper quantity of blood flowing in, and that with a proper impetus. And certainly, when a principal trunk of an artery is ſhut up, the moſt learned men, and among theſe Haller (*r*), did not doubt, " from phyſics, and hydraulics, " but the lateral branches, although ſmall, may afterwards be diſtended, if " they are acted upon by a fluid alone:" and, indeed, the ſame Haller (*s*) affirm'd it " to be commonly known, and to have been ſeen by him, that " upon cutting the radial artery away, the ulnar had been ſo dilated, that all " the branches which are ſupplied by the radial, receiv'd their blood from " thence."

Wherefore it is the more to be wiſh'd that the enquiry may be repeated, in the bodies of thoſe in whom the brachial artery itſelf has been tied up while living, for the ſake of curing an aneuriſm in the flexure of the elbow, by every anatomiſt who has opportunity to make it; and particularly by the ſame very excellent Molinelli: ſo that, as he has deſcrib'd with ſo much accuracy what he found in this firſt caſe, he might be able to inform us, even by the help of injection, whether the ſame, or different appearances, occur in bodies of this kind. For although the trunk of that artery is ſeldom

(*r*) Diſſert. de Arteria Brachii not. ad §. 45. (*s*) in Boerh. Prælect. ad Inſtit. §. 692. not. *e*.

double,

double, yet that the branches going from thence, both into the ulnar and the radial artery, which the celebrated Winſlow (*t*) calls collateral branches, do not appear in the ſame manner in all bodies; but that there are many in moſt bodies, ſufficiently appears, even from the deſcriptions of this author, and the illuſtrious Haller (*u*), when compar'd one with another. It is, therefore, probable it will at one time happen, that more than one of the collateral branches offer themſelves to the eyes in a dilated ſtate; and at another time, one only: although, even upon this hypotheſis, it could not be ſufficiently underſtood, how what Valſalva had obſerv'd, about the fifth day after tying up the artery, could happen; for if the dilatation of thoſe branches muſt be brought on by degrees, how had the pulſe ſo ſoon return'd to its natural impetus?

But in regard to the nerves; although the communications of the brachial one with another, and the frequent diſtribution of more than one branch therefrom into one muſcle, may, perhaps, tend to make us not quite ſo ſolicitous about making the ſame enquiry in reſpect to them, as we did in reſpect to the arteries; without doubt that change which the celebrated enquirer has obſerv'd, that change, I ſay, of the nerve, which ſeems to have been tied up together with the artery into a very large ganglion, deſerves to be confirm'd by many obſervations upon bodies of that kind; or even by experiments on brute animals, made with accuracy and attention: and it ought alſo to be enquir'd, whether this enlargement be owing to the very manifeſt dilatation of the arterial branch flowing into it, or rather, if this does not always occur, to the ligature made upon the nerve.

And I now ſee that this wiſh has been ſufficiently completed ſince my writing this letter (*x*), as far as relates to brute animals, by experiments which, as I judge them to be worthy of more than common praiſe in themſelves, ſo, if I am to conſider them as repetitions of the experiments of Valſalva, I hope to have a more convenient place of conſidering and ſaying what I wiſh for even in them. For at preſent it will be much more uſeful to you to conſider with diligence and attention, the obſervations and remarks which the celebrated Molinelli has made, in that clear and fruitful diſſertation, on performing the cure of the aneuriſm in the flexure of the elbow; not only by tying up the nerve with the artery more expeditiouſly, but alſo by throwing ligatures more ſafely round the aneuriſmal ſac; and join them with thoſe cures which he may perform hereafter. However, although he has completed the above obſervation of Valſalva for us, I do not very well know whom I can now find to make the following complete.

9. A certain man had labour'd under an aneuriſm in the left ham about ten years, which gave him great pain, and was equal nearly to three inches and a half, of the meaſure of Bologna, in its diameter. This being cur'd by Valſalva, the patient was at laſt carried off by another aneuriſm in the

(*t*) Expoſ. Anat. tr. des Arter. n. 140. & cæt.

(*u*) Diſſert. cit. §. 17. 19. & ſeqq. & 28. 36. 45. Adde nunc Faſcic. Icon. Anat. 6. & Guattani Hiſt. cit. Fig. 1.

(*x*) De Bonon. Sc. Inſt. Tom. 3. in Opuſc. & Quæſt. Præſide Hazon Pariſ. propoſ. 5. Febr. 1750. n. 4.

right

right ham. And when his body was open'd, a third aneuriſm was found to have been form'd at the curvature of the great artery.

10. As Laurence Heiſter, who is a very learned ſurgeon and phyſician, if any man is, in that diſſertation which is entitl'd "Of the ſtructure of the "knees, and their diſeaſes (*y*)," has admoniſh'd us, that "very few" aneuriſms had been remark'd in the ham; and, indeed, beſides thoſe that he himſelf mentions, I ſcarcely remember to have read of more than two, the firſt of which was formerly pointed out in one word by Severinus (*z*); and as to the other, Matanus (*a*) has very lately told us how great a quantity of blood it contain'd; I, therefore, was not willing to omit this obſervation of Valſalva, although obſcure (if you conſider thoſe things that I ſhall ſay preſently) and imperfect; as, beſides other things, it ſhows, at leaſt, how liable ſome bodies are to aneuriſms.

But although the very experienc'd Heiſter thinks the ſame method of cure which is made uſe of in the aneuriſm of the elbow, to be "not impracticable" in the ham alſo (*b*), on account of the ſame hope (which you will now ſee confirm'd by the very excellent Haller (*c*)) of the branches of the artery communicating laterally, and indeed profeſſes that he would undertake the operation whenever the caſe may offer; yet, as I never found any thing more in reſpect thereto to have been added by Valſalva, than what I have written in the hiſtory, I did not take upon me to determine by what method he had made the cure.

There were, indeed, among the papers of Valſalva, two figures, ſkilfully and elegantly drawn; one of which repreſents the popliteal artery on the ſurface that is turn'd towards the external parts; the other repreſents it on the oppoſite ſide, dilating itſelf, from the external ſurface, into an oblong ſac, which is narrower in proportion as it aſcends the more, and not without three orifices of arterial branches communicating with the narrower part of the ſac: ſo that unleſs this part was tied up with a ligature, according to the cuſtom of the celebrated Molinelli, it would have requir'd a very long and tedious manual operation; and yet the ſac is repreſented as entirely whole on the external ſide. For which reaſon, and the man's dying of an aneuriſm that had been form'd in the other ham, I almoſt conjectur'd that the latter, rather than the former, had been drawn in theſe figures, as Valſalva had taken it out from the dead body.

Nevertheleſs, it did not appear clear by what method he had cur'd that other, till, turning over the obſervations of the celebrated Benevoli, I happen'd to light on a paſſage, where (*d*), ſpeaking in commendation of the method already taken notice of to you on a former occaſion (*e*), in which Valſalva us'd to cure aneuriſms by letting blood frequently, and afterwards uſing a very ſpare diet; he aſſerts that he had ſeen, in the ſtudy of Valſalva, an example of one thus cur'd "in the popliteal artery," from a man who had been carried off by ſome other diſeaſe after the completion of this cure.

(*y*) N. 83.
(*z*) De recond. Abſceſſ. nat. l. 4. c. 7. prope finem ad n. 2.
(*a*) De Aneuryſmatic. præcord. Morbis Animadv. not. a ad § 71.
(*b*) Differt. indicata, n. 76, 77.
(*c*) Faſcic. Icon. Anat. 5. ad Tab. 4.
(*d*) Obſerv. 11.
(*e*) Epiſt. 17. n. 30.

For

For having read theſe words, and taken thoſe figures into my hands, when I obſerv'd that the ſac was certainly repreſented of a diameter far leſs than that which is propos'd above (*f*); I began to think, that the very great contraction of the ſac was to be aſcrib'd to this kind of cure: which, although Valſalva had made uſe of it againſt internal, and thoſe incipient, aneuriſms, he would, perhaps, have been willing to apply againſt this alſo, adding a compreſſing bandage, and other external aſſiſtances. But as I ſee ſome things which do not ſufficiently agree with this conjecture, I therefore leave it entirely to your determination: I pronounce nothing myſelf, and return now to more certain things.

11. A man, of forty years of age, had a ſmall but pulſating tumour which aroſe gradually about the right groin. Through the ſpace of three years it encreas'd every day, and became large. About the third month before his death, it began to trouble him with pains, and to bring on a large and equal œdematous ſwelling through the whole of that lower limb. In the laſt month the pains became very violent, and not at the tumour only, but ſometimes alſo below the internal anckle: in which one place, and only when the pains were troubleſome, the foot had feeling, being at other times depriv'd of all power of feeling and motion. There was never any reſpite from excruciating pain through the whole of this month, and no ſleep; till at length, the patient's ſtrength being worn out, he lay half-aſleep for ſome days, and in this manner died.

This aneuriſm had an immenſe cavity; for it reach'd from the anterior ſkin of the upper part of the thigh to the thickeſt of all the nerves, the *cruralis poſticus*. And, indeed, the crural artery, from the dilatation of which the tumour had begun, was found to be moderately dilated; but being in ſome places torn aſunder, or eroded, it had thrown out the blood through theſe apertures in ſuch a quantity, and with ſuch an impetus, that the muſcles partly being corroded, and partly giving way, it had produc'd a very large cavity, as I have already ſaid, and had eroded that very nerve which I mention'd juſt now, in ſuch a manner, that only a few fibres of it remain'd, by which the upper part was join'd with the lower. All that cavity was full of coagulated blood and polypous concretions, as they ſeem'd to be.

12. The diſſection very clearly ſhows the cauſe of all the ſymptoms that the man ſuffer'd. For after that the aneuriſm had degenerated from a true to a ſpurious one, in the manner that the word "ſpurious" is generally underſtood; that is, after the coats of the dilated artery, being ruptur'd or eroded, began to pour out the blood into the neighbouring parts; the remainder of this fluid could not now be ſent, either with that force or in that quantity, into the parts below, which are requir'd to preſerve its ſpeedy return through the veins: hence the œdematous ſwelling of the limb. And the extravaſated blood, while by tearing the muſcles one from another, it at the ſame time lacerated the little nerves with the interpos'd membranes, or at leaſt caus'd a diſtraction therein, created pains; but ſuch as were more eaſily to be borne than when it, at length, reach'd to that very thick nerve, and being now made more acrid by ſtagnation, began to erode it.

(*f*) N. 9.

At length, when the nerve was ſo far eroded as to that part from whence almoſt all the branches proceed that bring the power of feeling and moving to the foot; both of theſe powers were loſt therein, if you except that place which is near the internal anckle: for to this place belongs a branch that does not proceed from this poſterior, but from the anterior crural nerve, and generally accompanies the vena ſaphena. There is no need to explain in what manner the other ſymptoms were the conſequences of continual pains.

It is better to obſerve, from the ſucceſſion of theſe, and even of death itſelf, that where aneuriſms, even when external, are ſeated very near to the nerves, or to other parts of a quick and lively ſenſation, notwithſtanding they do not immediately become deſtructive by being ruptur'd and pouring out their blood, they may, nevertheleſs, carry off the patients by very ſevere and excruciating pains. And this will be confirm'd to you, beſides the hiſtory which I lately ſaw publiſh'd by Guattanus (*g*), and which may be compar'd with this of Valſalva, by ſome obſervations of Marcus Aurelius Severinus (*h*) on a Grecian man, and on a ſhoemaker.

But although you will very readily read the deſcription of the aneuriſm in Anſelmus Paganus, which Severinus has taken notice of with the others, as it is very ſimilar to that juſt now propos'd from Valſalva in its ſituation, magnitude, and moſt other of its circumſtances; yet when you conſider the incredible, I had almoſt ſaid, cure of the ſame, you will be very much ſurpriz'd that, among the problems explain'd by Severinus, this principal one was not very clearly and accurately diſcuſs'd; I mean, how the crural artery, "when putrefied, diſſolv'd, and broken down," near to the groin, could, by the force of fire applied thereto, again recover its parietes; ſo that the limb not only continu'd to live, but the man could even walk upright upon it, only with the ſmall ſupport of a low and ſlender cane.

13. In regard to other tumours which relate to this letter, Valſalva has left us nothing in writing beſides what has been ſaid above; unleſs we ſhould chuſe to refer to this claſs thoſe very few words which he has curſorily thrown into his medical reſponſes. In one of them, which is of the hæmorrhoids, he ſays that ſome condylomata, deſcrib'd with theſe, may be blind piles, as thoſe which, being often cover'd over with a coat of fat, do not ſeem to be veſſels dilated, as they really are, but excreſcences of another nature.

And in another reſponſe given upon an old tumour in the knee, which was taken for an exoſtoſis, it is natural to ſuppoſe, ſays he, as the tumour began to appear immediately after the retropulſion of a ſcabies, in which there was ſome ſuſpicion of a latent venereal virus, that the particles which, by previouſly vitiating the blood, had produc'd a ſcabies, being obſtructed in that part, had given origin to the tumour, either by lacerating the fibres of the bony ſubſtance, juſt as when the fibres of oaks being pierc'd through by inſects, galls, or oak-apples, riſe upon them; or by ſtagnating with the humours flowing through the joints, which is a thing that very eaſily happens, by reaſon of the narrowneſs of the veſſels in places of that kind; for being thus cemented with the ligaments and tendons, they have increas'd the thickneſs and

(*g*) Hiſt. 2. Aneuryſm. Hiſt. 2. (*h*) De recond. Abſceſſ. nat. l. 4. c. 7.

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the hardneſs of both: wherefore, if they are compreſs'd with the hand, they entirely bear the ſimilitude of bone; although to thoſe who enquire by diſſection, which ſometimes, ſays he, I have had opportunity to do, they reſemble the internal ſubſtance of the root of the reed, if I may be allow'd to uſe a kind of groſs compariſon.

14. Theſe things, then, have been left in writing by Valſalva. And ſome other things which were done and obſerv'd by him, he related to me; or obſerv'd and did even when I was preſent: and theſe I will now communicate to you. The firſt of which you may, in ſome meaſure, compare with that obſervation of our Fabricius, which I formerly referr'd to in the ſecond of the Adverſaria (*i*), or with another of that illuſtrious man Heiſter (*k*); or rather, if you chuſe to refer both of theſe to the claſs of *ganglia*, you may compare it, in ſome meaſure, as I have ſaid, with that which the very illuſtrious archiater Van Swieten (*l*) has taken notice of.

15. A virgin, as was related to me by Valſalva, had a very ſmall protuberance of the anckle, which, for more than ſixteen years after, created ſuch violent pains, that if ſhe had not been prevented by her domeſtics, ſhe would have cut off her foot.

Making an inciſion, therefore, in that part, according to the longitudinal direction of the leg, under the common integuments a gland, of a ſmall ſize, was found by him, of an oval figure, but depreſs'd, and, as to its colour and nature, ſeemingly in a middle ſtate betwixt the conglobate and conglomerate kinds. This gland being taken away, the pain no more return'd.

16. A ruſtic woman, whom by looking at you would have ſuppos'd to be dying of old-age, weak, wrinkled, dry, and even brought down to the moſt emaciated ſtate, lay ill in the hoſpital for Incurables, at Bologna. The cauſe of all her misfortunes was her right breaſt, which had grown out into a tumour, of a form and ſize that reſembled the human brain. This tumour, being every-where and altogether ulcerated, ſhow'd in ſeveral places, amidſt its red and bloody ſubſtance, many glands, as it were, equal in ſize to the largeſt grapes, but white in their colour, oblong, and ſmooth. As there was no room to attempt any other method of cure, on account of the woman's decay of ſtrength in particular; it came into Valſalva's mind to conſtringe the baſis of the tumour, which was large indeed, but leſs ſo than the other part, as far as the woman could bear it, by making a bandage thereon.

By this continual conſtriction being increas'd every day, it naturally follow'd that the edges of the tumour were depriv'd of their nouriſhment, and became dead all about; ſo that they could be cut away all round with the ſciſſars without pain or effuſion of blood; and the circumference of the baſis was more and more diminiſh'd. This method being continu'd for a conſiderable time, that very large tumour was reduc'd to a very ſmall bulk, and at length ſafely amputated. Wherefore a cicatrix being brought on, the woman, in the mean while, departed much recover'd in her health.

And leſt you ſhould doubt whether ſhe was perfectly cur'd in that part, it not only happen'd to me to ſee the other circumſtances which I have related

(*i*) Animad. 24. (*k*) Diſſert. de Tumorib. Cyſtic. ſingularib. n. 36.
(*l*) Comment. in Boerh. Aph. § 1084.

to you, but a year or two after I even ſaw what I am going to relate to you now. For one day, when I happen'd to be in the hoſpital together with Valſalva, behold a certain woman came to us, who ſaluted him and me alſo, as very well known to her, being of a very good habit of body, of a good colour, and, to appearance, of ſuch an age, that ſhe might ſeem to be the daughter, or rather the grand-daughter, of the other, whom I deſcrib'd to you juſt now. Yet ſhe was the very ſame I have ſpoken of, and ſhe wonder'd ſhe was not known by us; You will know very well, ſays ſhe, who I am, when I ſhall have told you the reaſon of my coming here: and no ſooner had ſhe ſaid this, but ſhe open'd her boſom, which was without any breaſt on one ſide; but ſound both on the right and the left ſide alſo: except that a ſmall ſwelling began to be perceiv'd under the ſkin of the breaſt.

In this manner, ſaid ſhe, the former tumour began: I therefore came hither that this new tumour may be cut out, before it encreaſes to any conſiderable ſize. And this was done a few days after by Valſalva; who was afraid, nevertheleſs, that freſh and freſh tumours would ſtill ariſe; and that even when this breaſt was taken away at length, the ſame would be form'd in ſome other place, and particularly in the uterus. And that he was not afraid of this without reaſon, is ſhown by too frequent obſervation: and indeed the very learned diſſertation of that illuſtrious man Triller (*m*), will ſhow you that he had reaſon to fear even worſe conſequences: after reading of which, and conſidering what more ſevere diſeaſes follow the extirpation of a cancer, for the moſt part, you may judge whether ſo great a ſeverity of evils is compenſated by the truce that may have been gain'd for a year or two: although the patient, ſo that ſhe be but deliver'd from the preſent pains, which would ſoon prove fatal, either does not ſuppoſe that others more violent will come on ſoon after, and kill her in a more cruel manner; or if ſhe does believe it, does not, however, pay ſo much regard to them, as what is to happen after ſome time.

17. I alſo ſaw a tumour of a far different kind cut out by Valſalva. Which, however, as I myſelf diſſected it after being cut out, with his conſent, I ſhall deſcribe below in its proper place. For now I muſt go on to my own diſſections. And firſt, not to repeat here what I have written elſewhere, you have in the ſame treatiſe, and the ſame epiſtle, which are taken notice of above (*n*), what I myſelf have obſerv'd of thoſe ſpurious varices, and of the ſteatomata of the eye-lids, when I pointed out what Valſalva has ſaid of both theſe kinds of tumours. And in regard to ſteatomata, and other encyſted tumours, many things that deſerve to be read are extant in that epiſtle of Boerhaave, which is entitled, "Of the ſtructure of glands;" and, in like manner, in the prælections upon his inſtitutions (*o*).

And although the ſame author, as it ſeems, gives an inſtance of a tumour containing an aqueous humour, not in juſt the ſame manner in both places; being, as I ſuppoſe, a little forgetful; yet it ſufficiently appears, which is the principal thing, that he had ſeen a tumour of this kind: and this obſer-

(*m*) De nociva Cancri inveter. Extirpatione Hiſt. præſertim 3. & Obſerv. addit. §. 17. & ſeqq.

(*n*) n. 2.

(*o*) ad §. 711.

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vation may be confirm'd by many examples added from the celebrated Heiſter (*p*). And to the ſame claſs belongs, in part, the deſcription of certain tumours in the head of an infant; which is transferr'd from Blaſius into this ſection of the Sepulchretum (*q*); although the water was divided into many hydatids. That which I obſerv'd in the following manner was more free, though it ſeem'd at firſt to be otherwiſe.

18. One of the bodies, the head and neck of which I made uſe of in my public anatomical demonſtrations of the year 1750, had a ſmall tumour at the left ſide of the os hyoides.

The tumour being laid quite bare by diſſection, and being ſet at liberty from the left horn of the os hyoides, to which it was externally connected, repreſented a congeries of hydatids, not larger than the laſt joint of the little finger. But having ſlightly prick'd the edge of it, the ſomewhat turbid water, which it contain'd, all immediately flow'd down, with even the ſlighteſt preſſure.

19. This, probably, might have been the beginning of a large tumour, if the man had liv'd much longer: although I think that tumours like theſe are to be plac'd in the number of thoſe which, while they are as yet incipient, are diſſolv'd without great difficulty: and I believe that one, which I ſaw form'd on the external part of the wriſt in my wife, to have been probably of this kind; being of the ſhape, hardneſs, and magnitude of a filbert. For though ſhe had been troubled with it for many weeks, behold one morning when ſhe roſe out of bed, ſhe found it to have been ſuddenly and entirely vaniſh'd during the night. The truth of which I was immediately witneſs to. But not many days after, the ſame tumour return'd; and after a much ſhorter time than before, again vaniſh'd away ſuddenly, never to return more; and what had not happen'd before, left the ſkin in that part diſtinguiſh'd by ſome red puſtules as it were; which went away of themſelves likewiſe ſoon after.

It was the ſummer-time, and ſhe had made uſe of reſolvent cerates and preſſure; having happen'd to hear from me that Valſalva aſcribed ſo great effects to this latter, as to order an encyſted tumour, which he himſelf had on one of his ſcapulas, to be compreſs'd even with the feet, in order to retard its encreaſe. But ſhe had us'd moderate preſſure only, as I perſuaded her, and that merely on the firſt days; and the cerates not for a long time, or at leaſt not conſtantly; as they ſeem'd to be of no advantage. Nor indeed, if you ſhould rather chooſe to conſider it as a ganglion, ſhall I greatly object to your opinion; for it was recent; ſo that there was no neceſſity to ſuppoſe it contain'd in very thick involucra; or to ſuppoſe that it included a humour, which a long-continu'd abſorption of the thinner particles had left more glutinous and leſs diſſipable.

You perceive I do not think in any different manner, of the matter of ganglions, from what their frequent diſſections have ſhown. Some of which you will read in the celebrated Heiſter (*r*); and others you will add from the

(*p*) Diſſert. ſupra ad n. 14. cit.
(*q*) Obſ. 1. §. 5.
(*r*) Inſtit. Chir. P. 2. S. 6. c. 171. n. 2.

obſervation of thoſe excellent men Weiſſius (*s*) and Ellerus (*t*). However, our country ſurgeons, as you very well know, call encyſted tumours *natte*; compriſing in this one word, not only thoſe three common kinds, but others; almoſt all of them, if you except the more learned, being entirely ignorant how different a matter from thoſe they ſometimes contain; and not ſo much as ſuſpecting, that where there is a hardneſs, there water may be; both of which have been obſerv'd by Boerhaave (*u*), and by Heiſter (*uu*), in theirs.

But there are, alſo, other peculiar kinds of tumours; as, for example's ſake, that which Jo. Paulus Kellius (*x*) exhibited, when Salzmannus was preſident, conſiſting nearly of membranes alone; which lying one upon another, in the manner of lamellæ, had produc'd a tumour in the neck, that was equal to the weight of five pounds; an inſtance that had ſcarcely ever occurr'd to any one before; or that which after others, and particularly after Severinus (*y*), is deſcrib'd by the very experienc'd Benevoli (*z*), containing a ſubſtance ſimilar to ſomething polypous. In reading of whoſe obſervation, I call'd to mind another, which our Mediavia communicated to me on the very day he made it, that is, in the month of June, in the year 1735.

20. A monk had a tumour form'd upon the region of one rotula, or knee-pan, which was equal to a man's fiſt in its ſize, hard, moveable, and free from pain; they call'd it *natta*.

The common integuments being cut into, and eaſily drawn aſunder; for there were no very cloſe connections that prevented it, and the blood-veſſels, though very thick indeed, were very ſmall; the tumour was ſeparated from the tendons that cover the knee-pan, with as much eaſe as one muſcle is generally ſeparated from another. Wherefore, the coat being uninjur'd, the tumour was taken away; and when cut into, ſhow'd this coat to be pretty thick; ſo that it might be divided into three laminæ, the middle of which was the thickeſt.

And whatever ſolid matter there was contain'd within the coat, was, to appearance, of a polypous ſubſtance; and that form'd into a kind of cancelli, ſo as to reſemble, in ſome meaſure, the ſpongy ſtructure which we ſee within the heads of the bones. All theſe cancelli were full of a dilute blood.

21. Tumours of this kind might, perhaps, have been plac'd among thoſe which Celſus (*a*) ſays, contain "ſomewhat like a heavy and bloody fleſh," if he had not claſs'd them among the ſoft and yielding tumours. Boerhaave (*b*), who does not eaſily ſuppoſe that ſarcomata are propagated from, and made up of, true fleſhy fibres, but of the adipoſe membrane; the fat of which, by reaſon of the ſmall veſſels being diſtended with blood, reſembles red fleſh; alſo aſſerts that tumours thus form'd are included in a thin pellicle; and can, for that reaſon, be taken away in an entire ſtate.

(*s*) Vid. Commerc. Litter. A. 1745. Hebd. 24. n. 1.
(*t*) Vid. Act. Erud. Lipſ. A. 1750. M. Octobr.
(*u*) (*uu*) Vid. ſupra ad n. 17.
(*x*) Diſput. de Tumore tunicato membranac. §. 1. & 7.
(*y*) l. 4. ſupra ad n. 10. cit. c. 2. & 3.
(*z*) Oſſervaz. 16.
(*a*) De Medic. l. 7. c. 6.
(*b*) Prælect. §. ſupra ad n. 17. cit.

And

And, indeed, I formerly ſaid in the Adverſaria (*c*), that I had ſeen fat ſometimes in the ſacculi of this membrane, ſo ting'd with blood, that theſe ſacculi themſelves reſembl'd fleſh. But whether the caſe was thus or not, or rather whether the redneſs was in the very thick and diſtended veſſels, which creep through the very frequent and very thin little membranes, that are interpos'd to the fat, and ſeen through it; it certainly did not happen to me, at that time, to ſee thoſe parts of the adipoſe membrane conglobated into a tumour, and ſurrounded with a peculiar coat. And though I would not deny but this might have happen'd to others; yet I believe that, on the other hand, all will not deny but theſe fleſhy excreſcences may eaſily ariſe from the fleſhy fibres themſelves, where any part of them is lacerated or eroded.

But theſe excreſcences do not relate to encyſted tumours, nor yet the excreſcences of the adipoſe membrane. Yet as ſome very learned men may ſeem to have confounded theſe latter with ſteatomata, and others may ſeem to have diſtinguiſh'd them from theſe indeed, and nevertheleſs to have plac'd them among encyſted tumours; I will here fully explain to you what I underſtand by the term of excreſcence of the adipoſe membrane, and what ſtructure thereof I have obſerv'd.

22. John Philip Jagraſſias, where he treats of the *natta* (*d*), which, he ſays, he had ſeen only in the ſcapulæ, having found fat contain'd therein, though ſometimes fleſh alſo, does not doubt but it is to be reduc'd to the claſs of ſteatomata. And our Fabricius ab Aquapendente (*e*) aſſerts, that the ſteatoma, when it is not in the head, but in other parts, "ſeems to con-"tain a matter rather ſimilar to other fat than to ſuet." Which remark clearly ſhows, that our anceſtors, although a ſebaceous matter was not found by them in tumours, but fat, did not, for this reaſon, ſuppoſe that a new claſs of tumours was to be conſtituted, as in our memory Littre (*f*), who thought proper that a tumour of this kind ſhould be ſeparated from a ſteatoma, and call'd a lipoma, ſuch as he ſaw on the ſcapula of a man, full of ſoft fat, not ſebaceous matter. Yet Ruyſch (*g*), when he afterwards deſcrib'd a tumour of that kind in a few words, continu'd to call it a ſteatoma.

But Palfin (*h*), taking notice of two tumours of the ſame kind, which had grown out to a prodigious ſize in the back of two women, makes uſe of neither term; and what all thoſe whom I have nam'd have either expreſsly done, or at leaſt in ſuch a manner, that, upon well-weighing all things, we may conjecture the ſame thing, omits himſelf to tell us, whether theſe tumours of thoſe women were comprehended in a peculiar cyſt likewiſe.

Nor, indeed, does he, or the others, declare with ſufficient plainneſs, what fat was found in thoſe tumours, whether it was comprehended in many cells, as in the adipoſe membrane, or whether it fill'd up the whole cavity, without any ſmall membranes being interpos'd; ſo that thoſe who read the account may be ſuſpicious that it was, if not "liquefied oil," with which

(*c*) II. Animad. 6.
(*d*) in fine Tract. de Tumor. p. n.
(*e*) in fine Append. l. 1. Chirurg.
(*f*) Hiſt. de l'Acad. R. des Sc. A. 1709. Obſ. Anat. 3.
(*g*) Epiſt. ad Boerh.
(*h*) Anat. du corpſ. hum. tr. 2. ch. 2.

Boer-

Boerhaave (*i*) aſſerts, that he, in conjunction with Ruyſch, had ſeen a tumour (of eight pounds in weight, taken from the back of a porter) fill'd; yet, at leaſt, that it was a "ſubſtance" which "was nothing but oil," as he had ſaid a little above, when taking notice of another tumour, or elſe the ſame, as it weigh'd juſt the ſame number of pounds, and was ſeen by Ruyſch.

It is not certain therefore, notwithſtanding ſome of them might be, that all the tumours I have ſpoken of were excreſcences of the adipoſe membrane itſelf, as that in fact was, which is deſcrib'd about the ſcapula of a woman, by Bleſius (*k*), and call'd *excreſcentia adipoſa* by him: which I omitted among thoſe taken notice of above, not becauſe it was diſſimilar in the ſubſtance which it contain'd; for this reſembl'd nothing but a yellowiſh fat; but becauſe the ſame ſubſtance was not ſoft, but endow'd, in ſome meaſure, with a cartilaginous hardneſs.

I, however, formerly ſent an obſervation to Schrockius, of a large adipoſe tumour, which itſelf alſo poſſeſs'd the region of the ſcapula; and that was in a woman too, as moſt of the others that I have ſpoken of likewiſe were. If you read this, for it is publiſh'd by Schrockius (*l*), and for that reaſon will not be repeated here, and join with it another, which I ſhall immediately ſubjoin, you will eaſily perceive how far my obſervations and opinions differ from thoſe of others.

23. A man, without any previous cauſe that he knew of, had a ſmall tumour appear in the common integuments of one buttock. This tumour encreaſing by degrees, at length reach'd to ſuch a ſize, as to equal the magnitude of a child's head, if not to exceed it. It was of a globular form, and being connected to the buttock by a ſhort peduncle, not thicker than two thumbs, hung downwards. There was the ſame colour both in the peduncle and the tumour, as in the other parts of the ſkin. There was no pain if you handled them, no hardneſs, no fluctuation, no pulſation. But the bulk was inconvenient to him when ſitting, and the weight (although it was ſuſtain'd with a broad and proper bandage, leſt the tumour ſhould increaſe by diſtraction, as it was very poſſible for it to do) was uneaſy to him when ſtanding or walking; and, at length, a fever, and a ſenſe of violent heat, which two ſymptoms ſometimes follow'd a very long or very quick walking, laid the man under a neceſſity of conſulting Valſalva.

Valſalva having conſider'd the whole of the caſe, and not doubting but the tumour ſhould be taken off, perform'd the operation a few days after, in my preſence, and in the following manner. After having tied up the peduncle by a ligature, near to the globe of the tumour, and not having, even by this means, perceiv'd any pulſation above the ligature, which ſhow'd the exiſtence of any pretty conſiderable artery in that part, he cut the peduncle acroſs, above the ligature. Nor did any more blood come forth upon the inciſion, than he had expected; but one ſmall artery ſhowing itſelf, and that ſo very ſmall as to be ſtopp'd by compreſſion alone, and but one vein of any importance, which however was but ſmall, running at the ſide of

(*i*) Prælect. ad § cit. ſupra ad n. 17.
(*k*) Part. 1. Obſ. Med. rar. 3.
(*l*) Eph. N. C. Cent. 5. Obſ. 17.

the

the peduncle under the ſkin, and being manifeſt before diſſection. And the wound being in a man of a good habit of body, and at a good ſeaſon of the year; for it was the ſpring of the year 1704; which much forwarded the advantage of remedies, was very ſoon heal'd up.

As the tumour had been taken out by Valſalva while I was looking on, ſo it was cut into and examin'd by me on the ſame day, while he look'd on. In the very place of exciſion, before I began to diſſect it, there appear'd four or five cylindrical bodies, as it were, of the thickneſs of a little finger, of which the peduncle conſiſted. Purſuing the courſe of theſe bodies then, I ſaw that the tumour was nothing elſe but the production thereof. For being become very thick, unequal, and tortuous, and being divided, each into many, they made up the whole of that bulk. Nor was there any need of the knife to disjoin them; for they were better disjoin'd by the fingers, and more eaſily, that is, by puſhing them on gradually.

The ſtructure and nature of theſe bodies was the ſame in the peduncle, and every where elſe; that is to ſay, their nature and ſtructure was the ſame with that of the adipoſe membrane; ſo as to differ from it in no point, whether you conſider'd the ſurrounding and interpos'd little membranes, or the fat they contain'd, which was ſoft and greaſy to the fingers, and inclining from a white colour to a yellow, of which kind the fat in the moſt healthy bodies is. No ſanguiferous veſſels appear'd to the eye, except at the upper part; and theſe were ſmall, as I had before perceiv'd to be the caſe, from what I remark'd during the exciſion. However, the whole tumour was ſurrounded with a pretty thick ſkin, ſo that you might divide it into two laminæ with the ſcalpel.

24. I do not doubt but from this obſervation, and the obſervation I ſent to Schrockius, which agrees with this in every circumſtance, you will clearly perceive, that theſe two tumours, diſſected by me, were nothing but excreſcences of the adipoſe membrane itſelf, that lies under the ſkin; as they were not made up of fat more or leſs liquid, and every where comprehended in a peculiar cyſt, but made up of fat which was included in the membranous cells, not only endow'd with the ſame ſtructure and nature wherewith they evidently are endow'd in that membrane, but, as the tranſverſe ſection both of the peduncle and baſis ſhow'd, evidently continu'd into that membrane.

Nor is the internal of thoſe two laminæ, into which I have ſaid that the ſkin might be divided, to be conſider'd as a peculiar cyſt; not only becauſe I know that it was not allowable to do ſo in that other obſervation, but alſo in particular, becauſe in either one or the other, if there had been a cyſt which every where embrac'd the tumour, certainly that portion of the cyſt which comprehended the upper part, would have been left within in its proper ſituation, as it was not cut out together with the tumour: and that it was not left within is to be argu'd from hence, that the wounds of both patients were eaſily heal'd, and without the aſſiſtance of ſuch things as deſtroy a portion of the follicle left behind, by corroding or putrefying it; whereas if this be not conſum'd, the wound is not brought to a firm cicatrix, and the tumour returns afterwards: neither of which circumſtances happen'd to theſe patients.

To this very kind of tumour, I ſhould ſuppoſe, belong'd that which I have already (*m*) mention'd to you, as being taken for an omphalo-epiplocele, by phyſicians of eminence; whereas in the body, after death, no hernia was found there, but only a prominence from a quantity of fat which the cells, indeed, of the ſubjected membrana adipoſa contain'd, but no peculiar cyſt. And that to this claſs belong that globe of ſound fat, which I formerly ſpoke of to you in another letter (*n*), as lying under the ſkin of the abdomen in like manner, but ſomewhat higher than the other; that is to ſay, about the enſiform cartilage of an old woman; I, for a certainty, know, inaſmuch as I diſſected it myſelf, and clearly ſaw that it appear'd in the manner I here require; as I do alſo of that which I ſhall deſcribe hereafter (*o*), as having been accurately examin'd by me in the thigh of another woman.

And that of the two propos'd by Littre, the one which he himſelf alſo found in the thigh of a decrepit woman (*p*) was ſimilar to theſe, I ſhould more readily believe, than of that, taken notice of above (*q*), upon the ſcapula of a man; as in this he not only has made no mention of cells, but has even expreſsly ſuppos'd a cyſt wherewith it was ſurrounded; whereas in that tumour of the woman he makes mention of cells indeed, but by no means of a cyſt; and even when there is a neceſſity of coming to the amputation of a tumour which does not yield to thoſe things that he recommends to be applied externally, in the beginning, he would have nothing of the tumour left behind, leſt, as he ſays, it ſhould happen to ſpring forth again from ſome cell that was already relax'd, and not from the remains of the cyſt, which, if he had then ſeen it to exiſt in any part, he would not there have omitted.

A tumour made up of fat Littre ſuppos'd to be very rare, and perhaps not ſeen before. Yet Elſholzius (*r*) had, thirty-eight years before, publiſh'd the diſſection of a tumour, under the name of a ſteatoma, which having been form'd in a ſoldier, almoſt betwixt his thighs, contain'd fat, "in very thin "little membranes, diſpers'd through the whole maſs of the tumour, and "diſtinguiſh'd into cells as it were." And this tumour I could ſcarcely ſuppoſe to differ from thoſe that I diſſected, even conſidering the repreſentation of it when diſſected, if a ſurrounding follicle had not been ſpoken of, and that almoſt equal to a gooſe-quill in thickneſs.

There are others alſo, of which mention is made by Alexander Camerarius (*s*), as containing fat, or a matter ſimilar to fat; but with this other, and ſtill other ſubſtances, and amongſt theſe ſome having glands lying betwixt, or as not exiſting in the membrana adipoſa; ſo that I cannot conſider them as true excreſcences of this membrane; as I, in like manner, cannot thoſe that are deſcrib'd in the Commercium Litterarium (*t*), as made up "of fat "like the udder of a beaſt, or the breaſt of a woman, being contain'd in "its proper cells, tenacious, hard, and thick, and having very large veſſels

(*m*) Epiſt. 43. n. 10.
(*n*) Epiſt. 19. n. 18.
(*o*) Epiſt. 68. n. 6. Adde etiam alterum ibid. n. 8.
(*p*) Hiſt. de l'Acad. R. des Sc. A. 1704. Obſ. Anat. 1.
(*q*) N. 22.
(*r*) Hiſt. Steatomat. reſect.
(*s*) Hiſt. Pedis tumid.
(*t*) A. 1741. Hebd. 1. n. 4.

"carrying

" carrying red blood interſpers'd with it :" although I do not deny but theſe might have been ſo in the beginning, as well as thoſe deſcrib'd by me. Be this as it will, however, I take upon me to perſuade you to join theſe to this ſection of the Sepulchretum, as you may do it with juſtice.

And I think juſt in the ſame manner of two tumours in particular, one of which was deſcrib'd by Jo. George Hoyer (*u*), and the other by Elias Camerarius (*x*) ; the former in a woman of an advanc'd age, about the region of the left ſcapula ; the latter upon the knee of a man, and above it. The improper methods of application that had been made uſe of by mountebanks, might change many things in both tumours, as far as relates to the ſubſtances interpos'd to their more deep and retir'd ſituation, or to the conſiſtence of the fat ; and thoſe appearances that are call'd glandular conglomerations, but are ſaid to conſiſt of a matter ſimilar to the adipoſe ſubſtance, and thoſe parts that are ſaid to be many alveoli, as it were, or ſmall cavities, from which the ſofter fat was preſs'd out, might formerly have been the cells of this fat.

But theſe things amount to no more than conjecture : this is certain, that if I had found a tumour of that kind whereof you have a very ſmall one deſcrib'd in the forty-fourth letter (*y*) under the ſkin itſelf, as I did in the meſentery, I ſhould never have claſs'd it among the true excreſcences of the adipoſe membrane ; for it contain'd fat which was not ſeparated by the laminæ of the cells, and was every-where comprehended in one ſpherical follicle.

25. But whatever cauſe may relax the ſkin in a certain place, ſo as to make it give leſs reſiſtance to the weight or bulk of the many fat cells, which increaſe more and more in the part where there is the leaſt reſiſtance, eſpecially if compreſſion, or any obſtruction be added ; either of the ſmall veins that carry back the fat from thoſe cells, or even of the foramina by which it is tranſmitted into the neighbouring cells, affords us an eaſy method of accounting for the origin of theſe excreſcences whereof we ſpeak, and their vaſt increaſe alſo ; the very weight of the fat, for inſtance, relaxing every day more and more both the cells and the ſkin : for which reaſon ſtill other and other cells, upon the removal of the former reſiſtance, expand themſelves, and are enlarg'd in a ſurprizing manner.

How much the removal of reſiſtance contributes to the enlargement even of fat tumours, thoſe two in particular which I ſpoke of juſt now (*z*), as deſcrib'd by thoſe celebrated men Jo. George Hoyer and Elias Camerarius, ſhow. For the ſkin being eroded, or incis'd, by mountebanks, and almoſt all their adipoſe ſubſtance, or at leaſt a very conſiderable part of it, being taken away, theſe tumours began to be enlarg'd in a ſurpriſing manner, and had a very ſpeedy increaſe in their ſubſtances of this kind ; as you will learn from the hiſtories of both.

However, although in ſpeaking of the membrana adipoſa itſelf, I have mention'd nothing of it in this place, but its cells ; I did not, for that reaſon, mean to determine any thing in relation to its ſtructure. For whether you ſhould chuſe to call any of the larger parts of that membrane facculi, or lobes,

(*u*) Eph. N. C. Dec. 3. A. 7, & 8. Obſ. 183.
(*x*) Dec. ead. A. 5, & 6. Obſ. 41.
(*y*) N. 3.
(*z*) N. 24.

and the leſſer parts lobules, and, in fine, very ſmall cells, or kernel-like bodies; or whether you chuſe to comprehend all theſe under one term of cells, or to call them membranous *revolutions and complications*, or even membranous laminæ variouſly inclin'd to each other; it will equally tend to give you a juſt conception of the matter: and you will find authors, who are by no means contemptible, ſpeaking of each of theſe modes of ſtructure. For the fourth is from an illuſtrious anatomiſt among the more modern; the third from our Sanctorius (*a*), who by this means led the way, as it were, to thoſe modes which we have from the others; the ſecond was made uſe of by Gliſſon (*b*), though he had not as yet, in my opinion, ſeen that of Malpighi, when he wrote, nor yet Malpighi that of Gliſſon, as I believe Malpighi publiſh'd his (*c*) before the other; and his was almoſt the ſame as that which was pointed out in the firſt place by me.

And that, if you pleaſe, you may follow: for what forbids us to divide the larger parts into ſmaller, and theſe into very ſmall? eſpecially as Malpighi has, if I remember rightly, no-where expreſsly denied, that theſe parts have communication with each other, and with the reſt; nor has taught that the membranous "ſacculi, or lobuli," have an oval figure, but "almoſt "oval;" and even "that they are differently figur'd, and are like the ſmall "lobes of which the lungs are alſo compos'd:" and of how different forms theſe lobules are, appears from the figures that he join'd to his epiſtles of the lungs. And he had, moreover, written this before, "that in a ſacculus were "contain'd very ſmall lobules of a very different figure, fill'd with fat."

However, to return to excreſcences of that kind which I have ſpoken of; that ſome excreſcences, very ſimilar to them, exiſt not only in the adipoſe membrane, but alſo in other internal membranes, and particularly in the omentum, is ſhown by an obſervation which is transferr'd into the *Bibliotheca Anatomica* (*d*), of innumerable proceſſes, an inch in thickneſs, and four or five inches in length, that hung from the adipoſe parts of the omentum, being alſo turgid with the ſame kind of half-concreted oleoſe fluid that the other adipoſe membranes are. But omitting theſe more internal tumours, let us go on to ſpeak of thoſe which fall under the notice of the hands and eyes, as the intention of this letter requires.

26. But although, for the ſake of ſome order, I ſhall ſpeak of thoſe tumours that remain in ſuch a manner as to follow their ſituation, rather than their nature; that is, to begin with thoſe which occur in the head and the neck, and after that to deſcend to the inferior parts; I would not, however, have you expect that I here take notice of the venereal "gummata," which diſcover themſelves there, and in other parts; as I ſhall, with more propriety, reſerve the conſideration of them till we come to conſider the venereal lues (*e*); and much leſs that I here repeat what I have already written (*f*) on the hydrocephalus, or on the polypi of the noſtrils (*g*).

As to tumours of the tongue, I have, indeed, ſeen many of them; but

(*a*) Comment. in I. Fen Avic. Quæſt. 55.
(*b*) Tract. de Partib. Continent. c. 11, & 15.
(*c*) Exercit. de Omento, Pingued. & cæt.
(*d*) Tom. 1. P. 1. in Adnot. ad cit. Malp. Exercit.
(*e*) Epiſt. 58.
(*f*) Epiſt. 12.
(*g*) Epiſt. 14.

never

never have had opportunity of examining any by diſſection. Yet among thoſe I have ſeen, I am not willing to omit, in this place, ſome very ſmall tubercles, like warts, on the upper ſurface of it, very near to the baſis, which were formerly ſhown to me by a ſurgeon, in a woman of Padua, in order to take my advice in regard to the proper method of extirpating them. I was not ignorant that Marcellus Donatus (*b*) had mention'd verrucæ, or warts, of the tongue, as a very rare caſe, and what had been ſeen by him but twice in the whole courſe of his life. For which reaſon, I was the more attentive to examine them, while the woman thruſt forth her tongue, and the ſurgeon depreſs'd it. And, indeed, nothing could be more like warts in appearance; but, in fact, thoſe tubercles were nothing more than the laſt and largeſt of all the papillæ, as the ſituation and poſition of them immediately ſhow'd; being diſeas'd only in this one reſpect, that, as this part of the tongue was affected with a phlogoſis, they were alſo become ſomewhat thicker and higher than uſual, and protuberated.

I deſir'd, therefore, both the woman and the ſurgeon to be of good courage, and gave him no other advice in regard to theſe tubercles, when I conferr'd with him, but that he ſhould frequent anatomical demonſtrations; by the neglect of which it happens more frequently than you imagine, that the appearances which are natural are conſider'd as morbid; juſt as when thoſe foramina that naturally open in the neighbouring tonſils are taken for ulcers.

The tonſils, however, I have more than once diſſected in dead bodies, either when tumid from a preſent inflammation, or from one that had preceded.

But I never was willing to perſuade any one to have them taken away with the knife, when they were become hard, and growing out into ſcirrhous tumours; not becauſe I was ignorant that they might be taken out, but becauſe I could not be ſure that other ſurgeons would make uſe of the ſame dexterity and felicity, in this operation, as ſome very experienc'd ſurgeons have done, and in particular Benevoli (*i*); eſpecially as I am very well inform'd in how much danger ſome of thoſe who have undergone the operation of extirpating the tonſils have been, on account of a very great effuſion of blood, which has not been ſtopp'd, at length, but with difficulty.

And I was very glad when I heard that very prudent and learned phyſician Franceſco Serao ſay, in a conference with me, that he us'd to behave in nearly the ſame manner; that is, to propoſe, on the one hand, the ſucceſsful inſtances of their extirpation, many of which he had ſeen; and, on the other hand, the examples wherein there had been great fear and danger, which he likewiſe was not ignorant of: and then leave to the diſcretion of thoſe who conſulted him what they would do, without interpoſing any judgment or perſuaſion of his own.

Yet thoſe ſurgeons better deſerve to be forgiven, who, when they ſee that paſſage which is neceſſary for ſpeaking, ſwallowing, and breathing, already become very narrow, by reaſon of a ſcirrhous tumour of both the tonſils, and all other remedies of no effect, fearing that it will be every day more narrow, are bold enough to precipitate the patient into a preſent danger, in

(*b*) De Medic. Hiſt. Mirab. l. 3. c. 5. (*i*) Oſſervaz. 12.

order

order to avoid a future one; better deſerve, I ſay, to be forgiven, than they who undertake to extirpate a wart, or any other harmleſs tubercle of that kind, from the face, eſpecially if it be congenial and livid; not attending to what Arantius (*k*) has admoniſh'd us of, that if the caſe ſucceed well, very ſmall reputation is acquir'd thereby, as from a caſe of very ſmall importance; but that great infamy and reproach are the conſequences, if, which frequently and eaſily happens, the moſt violent diſorders are excited even from a ſlight irritation of the face: I ſay, of the face; inaſmuch as I ſaw a caſe which happen'd, not from the extirpation of a tubercle of this kind from the ſkin of the noſe or lips, but from the ſkin of the cheek, and that to the great diſgrace of the ſurgeon. At firſt, indeed, there was only a ſlight ulcer; but this could not be brought to a cicatrix, though in a prieſt who was in other reſpects in very good health; and this at length degenerated into a large cancerous and incurable ulcer, in which ſtate I ſaw it; ſo that the whole cheek was entirely conſum'd, and the patient kill'd by the moſt ſevere and excruciating pains. Yet the ſurgeon had taken off this tubercle by the knife: and this I ſay, that you may be leſs ſurpriz'd to read of a much larger cancerous ulcer having been the conſequence, when another ſurgeon had undertaken to remove a wart of the face (*l*) by "cauſtic" remedies.

27. But as to what I ſaw, by diſſection, in a recent and large tumour that occupied the cheek, and the parts that are below the chin and the ear (*m*); or in another leſs recent, that had been form'd behind the ear (*n*); or what kind of matter I found in the parotid gland; and into what a hardneſs it degenerated by ſtagnation; has been ſufficiently ſaid on a former occaſion (*o*). But what makes that tumour in the ſame gland, which we call the *parotis*, and which every one knows to happen often in the height of an acute diſeaſe, while the event of it is yet doubtful; though ſometimes it happens even in thoſe who are upon the recovery, and ſuch as are taken up from the bed, and that with ſucceſs; as it never yet happen'd to me to diſſect it, I cannot certainly ſay: yet you will, perhaps, conjecture, that it may ſometimes be brought on from a fluid, which rather diſtends the common integuments of the gland, than the gland itſelf; and conjecture it in conſequence of what I have taken notice of, as having been ſeen by me, when deſcribing that tumour which was mention'd in the firſt place, eſpecially where the gland, after the ſuppuration and cure of the tumour, performs its office properly as before.

And that the gland itſelf grows gradually tumid ſometimes, without any preceding fever, and becomes hard, juſt as the other glands that lie lower in the neck do, when they grow large and ſtrumous, is too well known to all phyſicians and ſurgeons; to whom they generally create a good deal of trouble. Yet ſometimes they are reſolv'd much more eaſily than could be expected. Thus in a Venetian girl of ſeven years of age, I remember that it had become very hard, and extremely tumid, and could not be touch'd without pain; yet that the whole of the matter which had ſtagnated there, was

(*k*) De Tumorib. p. n. c. 23. & 31.
(*l*) Eph. N. C. Cent. 5. Obſ. 35.
(*m*) Epiſt. 4. n. 24.
(*n*) Ep. 14. n. 3.
(*o*) Ep. 11. n. 15.

entirely,

entirely, though ſlowly, diſcuſs'd; and that the gland return'd to its natural proportion, merely by the help of anointing it with the *Oleum Philoſophorum*.

But in regard to ſtrumas, I have heard our Valliſneri more than once aſſert, that when a poor woman had brought to him her child, who was a very young girl, and ſtrumous; he, in conſequence of her poverty, had preſcrib'd nothing to be taken but a ſmall wine, in which the inſects call'd *ſows* were macerated; and the woman had even always put more of them into the wine than he order'd, and by that means excited a great flow of urine; and that ſhe return'd with her daughter a month after, who was perfectly cur'd, to his very great ſurprize.

Theſe remedies, however, I do not make mention of as being unknown; but rather becauſe they are ſo very well known, and, for that reaſon, deſpis'd by ſome; whereas they nevertheleſs may ſometimes, and particularly in a tender age, when the diſeaſe is not very inveterate, be of greater uſe to the patient than we could hope or expect.

28. Perhaps you will here enquire, whether ſome things ſaid by Riolanus upon ſtrumæ, in the ſecond book and fifteenth chapter of his *Anthropographia*, are ſaid with propriety and juſtice. And theſe are ſaid with juſtice and propriety: "Nor is it without reaſon that Julius Pollux, in his Onomaſticon, "has obſerv'd that ſtrumæ are form'd about the meſentery. On this ſubject "ſee Philip Ingraſſias, in his book of tumours, page two hundred and "ninety-nine." But theſe things, which immediately precede, are not ſaid with juſtice: "Nor do ſtrumas ever break out externally, unleſs the meſen-"tery has been ſtrumous. And, for this reaſon, Guido de Cauliaco very "properly derives the ſource of ſtrumas from the meſentery."

For Guido (*p*), and he who is quoted by him, Arnoldus, ſays this; that from external ſtrumas, if many in number, the exiſtence of the internal is prov'd. Nor is what Riolanus ſays univerſally true; I mean, that the ſtruma never appears outwardly, unleſs there are others in the meſentery: and that is deſervedly diſapprov'd by Thomas Bartholin (*q*). Againſt whom Riolanus is not well defended in this ſection of the Sepulchretum (*r*), as if he had ſaid no more than what is ſaid by Guido; that is, if the external ſtrumæ are "in great number." For Riolanus has added this in his Encheiridion (*s*), and even has more contracted, in that work, what he had before ſaid in his Anthropographia, by ſaying, that ſtrumas "rarely appear externally in great "numbers, unleſs they have their roots ſeated in the meſentery." Bartholin, however, did not refer to the Encheiridion, but to the Anthropographia; as others have alſo done; and among theſe Schelhammer (*t*); and before him Sculteus. Who, as you ſee from the Sepulchretum itſelf (*u*), attributed this univerſal opinion to Riolanus; and added, "which even Guido and "Ingraſſias bear teſtimony to."

(*p*) Chirurg. tr. 2. doctr. 1. c. 4.
(*q*) Anat. quart. renov. l. 1. c. 12.
(*r*) Obſ. 6. Schol. ad §. 4.
(*s*) l. 2. c. 18.
(*t*) De hum. corp. Tumoribus S. 2. P. 1. n. 78.
(*u*) Obſ. cit. §. 9.

What

What the firſt of theſe authors has aſſerted, I have already told you; and Ingraſſias is not even ſaid to have aſſerted this by Riolanus; but it is quoted as relating the opinion of Pollux, (which is quite different) and confirming it; that is to ſay, "that ſtrumas are alſo form'd about the meſentery;" which Schelhammer and Scultetus would have known, as Riolanus admoniſhes, by inſpecting the book of Ingraſſias, and he who added the ſcholium of this obſervation in the Sepulchretum; in whom, in other reſpects, there is no reaſon why we ſhould require this diligence, ſince neither the paſſage of Scultetus is accurately copied, nor is the chapter of Riolanus rightly put down; but the fifth inſtead of the fifteenth; and the thirty-ninth obſervation of Scultetus inſtead of the thirty-firſt.

Some years ago I ſaw a noble youth that might have been compar'd with him deſcrib'd in the Sepulchretum by Platerus (*x*), by reaſon of the number of his external ſtrumas, and the various, but always uſeleſs, methods of cure, that had been made uſe of; who in the firſt year, however, had no mark of the meſentery being affected in the ſame manner. But neither Platerus examin'd the belly of his patient, though he had it in his power; nor I of mine, as he at length died at ſome diſtance from hence.

Yet this which I ſhall immediately ſubjoin, and which is ſufficient againſt what is pronounc'd by Riolanus in his Anthropographia, I remember to have ſeen in another body.

29. A young man had died in this hoſpital, about the beginning of November, in the year 1715, from the effects of ſtrumous tumours, which beſet his neck.

Being led, by the deſire of anatomical reſearches, to diſſect ſome other parts, and among them the meſentery, I not only found no ſtruma in them, but even no indurated glands: and although they ſeem'd to be a little larger than they generally are, I ſuppos'd this to be owing rather to the age (*y*) of the patient, for he was very young, than to diſeaſe.

30. That tumours of the thyroid gland ought to be entirely referr'd to the claſs of ſtrumas of the neck, and that they are improperly call'd bronchoceles, is affirm'd by John Freind (*z*); who acknowledges many kinds of theſe, but all on the outſide of that gland; and amongſt them one that is ſimilar to an aneuriſm; to which, therefore, the ſcalpel ought not to be applied. But John Riolanus (*a*), before Schelhammer (*b*), who thought himſelf to be the firſt that had obſerv'd this, claſſes among bronchoceles, which he ſuppoſes to differ "widely from ſtrumas," the thyroid gland, "in a more "extended ſtate, which produces a ſarcoma;" nor does he mention any one among them that is ſimilar to an aneuriſm.

For I would have you take care how you ſuppoſe that the example which is immediately ſubjoin'd to this paſſage of Riolanus, in the Sepulchretum (*c*), of a bronchocele of that kind, which was very ſimilar to an aneuriſm, unleſs it was rather a real aneuriſm, belongs to the ſame author; that is, to Riolanus, or perhaps to Parey; both of whoſe words and obſervations had been juſt

(*x*) Obſ. ead. §. 3.
(*y*) Vid. Haller. ad Boerh. Prælect. §. 128. not. 2.
(*z*) Hiſt. Medic. ubi de Albucaſi.
(*a*) Encheir. Anat. l. 4. c. 7.
(*b*) l. cit. S. & P. ead. n. 83.
(*c*) Sect. hac 2. Obſ. 5. §. 2.

before quoted. But if you aſk to whom then that example, and the two which follow next (*d*), belong, read Severinus (*e*); and you will find that thoſe three inſtances are deſcrib'd from him, though with great negligence; and that he has expreſsly plac'd the laſt in the claſs of aneuriſms themſelves.

To me, however, it has always happen'd, that, among the great number of ſwell'd necks, ſuppos'd to be affected with a bronchocele, which I have diſſected, I always found the diſorder in the thyroid gland; even when there was a cavity ſimilar to that of an aneuriſm; or one, at leaſt, which was full of blood. But as theſe obſervations of mine, of the various and manifold diſorder in that gland, when tumid, are already extant in the ninth of the *Epiſtolæ Anatomicæ* (*f*), there is no occaſion to repeat them here. Moreover, you have others in other letters which I have ſent to you (*g*); and I ſhall add ſome here; from which you may more and more underſtand, how various the diſorders of that gland are; or, at leaſt, of what nature the beginnings of this diſorder are.

31. A woman, whoſe body was diſſected in this college, in the year 1741, the remainder of whoſe hiſtory I ſhall ſend to you when I treat of the gout (*h*), had the thyroid gland much thicker than it naturally is, roundiſh in its figure, and univerſally conglobated into itſelf. In cutting into it I found it to be hard, and even ſcirrhous; a white ſubſtance being here and there interpos'd betwixt a ſubſtance which was of a fleſhy colour, degenerating into brown.

32. As I was diſſecting the head and neck of another woman, in the ſame place, and the ſame year, I obſerv'd the gland we are ſpeaking of to be ſomewhat hard at the lower part of the left lobe; cutting both lobes aſunder, therefore, longitudinally, I ſaw many and pretty large portions of a white ſubſtance intermix'd with both, and particularly the right; and in the other, in which I have ſaid there was a part ſomewhat hard, I ſaw a cyſt included, made up of a thick and white coat, wherein a yellow humour, ſomewhat denſe in its conſiſtence, was contain'd.

33. A man, whoſe head and neck were diſſected there about the ſame time, had one lobe of the thyroid gland larger than the other, and conſiderably higher. When I examin'd with great attention the upper part of that lobe, which was very hard; I obſerv'd a membranous bladder, of the form of a very round globe, to be half-buried in it: and this bladder being perforated, a humour of a viſcid nature and a yellow colour, ſo as to reſemble bile, was diſcharg'd.

34. The larynx of a woman was prepar'd for demonſtration in the ſame place, in the year 1744. The ſame gland being taken out, and being larger and more turgid than it generally is, ſhow'd certain globules, which were in one part of them protuberant, and in the other part buried within the glandular ſubſtance, being all of a round form, but of different magnitudes from each other. The largeſt was equal to the ſize of a grape: the others were much leſs. When the coat of theſe globules was punctur'd, a fluid, like

(*d*) § 3, & 4.
(*e*) De recond. Abſceſſ. nat. l. 4. c. 6, & 7.
(*f*) N. 38. & ſeq.
(*g*) Epiſt. 16. n. 38. Epiſt. 23. n. 4. Epiſt. 26. n. 21. & Epiſt. 34. n. 15.
(*h*) Epiſt. 57. n. 2.

water, and without any colour, came forth. But the largeſt was of a far different kind; for it was made up of a firm ſubſtance, as I perceiv'd by diſſection, not much unlike that of which the conglobated glands conſiſt, but of a reddiſh colour, degenerating into a dirty white, except where it was here and there diſtinguiſh'd with ſmall ſpots of black blood, as it were, and in ſome places with very ſmall cavities that contain'd nothing.

35. Another woman, who was diſſected a little after that, but in the hoſpital, had in the thyroid gland, at the baſis of the right lobe, a ſmall white body of the bigneſs of a vetch, and in ſome meaſure of the form, being a little prominent on the outſide of the gland: and in cutting into this body, I found it rather to be bony than cartilaginous.

36. A young man having died of an aſcites, his head and neck, as no better could be then procur'd, were brought into the theatre, in order to finiſh the public anatomical demonſtrations of the year 1747. In which, though the other parts were in a pretty natural ſtate, the gland that I have ſo often ſpoken of was thicker than it generally is, and, at the lower part of one of its lobes, even harder. In this place, when diſſected, I ſaw that it conſiſted of round veſicles, as it were, full of mucus. The remaining ſubſtance, if you examin'd it externally, repreſented the gland as divided into pretty large lobes; if internally, into very ſmall lobes, but more than uſually diſtinct.

37. From theſe obſervations you perceive, that the tumours of the thyroid gland, or the beginnings of theſe tumours, happen more frequently to the female ſex, than to ours. And this I have alſo hinted at in the *Epiſtolæ Anatomicæ* (*i*); and you will conjecture it from the examples of a bronchocele which are transferr'd into the Sepulcretum, firſt, if you compare them altogether; for you will not only find them in this ſection of the Sepulchretum, but alſo in the eighth ſection of the third book (*k*), and in the ſecond ſection of the ſecond book (*l*), which I wonder that Bonetus ſhould have forgot to mention here, according to his cuſtom; and in the ſecond place, if you ſet aſide thoſe things that rather relate to true aneuriſms, which you will very eaſily find out by comparing them with the books from whence they are taken.

But I ſuppoſe it will be of no conſequence to compare one of thoſe that are propos'd in the ſecond book, from Moinichenius, for inſtance; for in this caſe I ſhould put you in mind that, inſtead of *Epid.* 77, as it is publiſh'd in the Sepulchretum, you ſhould read *Epiſt.* 87; for Moinichenius wrote that to Bartholin at the end of this letter (*m*). And there would be no need of conjecture, if they who have told us what they found in the bronchocele, had not omitted to take notice in what ſtate they found the thyroid gland: to which, however, I ſuppoſe them moſt frequently to have belong'd; and this not only from ſome of the author's words, but ſtill more from all the obſervations I have made quite to the preſent time.

But I would, likewiſe, have you examine thoſe that have been publiſh'd

(*i*) Epiſt. 9. n. 40.
(*k*) Obſ. 31. in fine.
(*l*) Obſ. 9. § 1, & 4.
(*m*) Vid. in Bartholini Cent. 2. Epiſt. Medic.

by men of eminence ſince the ſecond edition of the Sepulchretum, Henricus Albertus Nicolai (*n*), Philip Conrade Fabricius (*o*), the French phyſician Lalouette (*p*), Janus Plancus (*q*), Albertus Haller (*r*), and others; and among theſe, as I learn from Boeclerus (*s*), Lauthius. That different perſons have ſeen different diſorders in the thyroid gland, you will find by reading their obſervations; but that moſt of them met with hard bodies of a cartilaginous, bony, or ſtony nature, and ſometimes even found the gland itſelf become bony, or of a ſtony nature.

Do not, however, imagine, becauſe there is more than one of them, as well as myſelf, who have ſometimes obſerv'd theſe or other diſorders in one lobe of the gland only, the other being quite ſound; do not, I ſay, imagine that this gland is not ſolitary, but conſiſts really of two; unleſs you chuſe to ſuſpect the ſame of the ſpleen or the liver, when one part of them is ſeiz'd with a diſeaſe, though the other is ſound. And ſtill more beware, where you read ſome diſquiſitions upon the thyroid gland, leſt you are eaſily allur'd by the promiſes which you find in the beginning. But previouſly read, with attention, whatever is written of this gland, not only in the ninth of the *Epiſtolæ Anatomicæ* (*t*), but alſo in thoſe paſſages that the ſame epiſtle refers to of the firſt, fourth, and ſixth Adverſaria; and then, at length, read over thoſe diſquiſitions alſo.

You will, indeed, commend, in concert with me, the deſign of the author, and his endeavour to promote and illuſtrate that ſuſpicion of mine, of many but very ſlender tubuli going from the thyroid gland, and terminating in the larynx. But you will wiſh, at the ſame time, that he had conjectur'd theſe to be far different from lymphæducts, bearing in mind the office and ſtructure thereof: and, in other things, that what is mine he would attribute to me; that what is not mine he would not attribute to me; as, for example's ſake, where I am ſaid to have prohibited the immiſſion of air, or to have rejected the compreſſion of this gland, in order to enquire into the tubuli thereof.

Is not it ſufficient to have inſpected, though never ſo ſlightly, a page or two of that epiſtle (*u*), in order to ſhow whether I prohibited immiſſion of air? Did I reject the compreſſion of the gland? I admoniſh'd that this was to be done with caution and gentleneſs: which was very well underſtood by that experienc'd man Boecler (*x*), when, diſſenting from the author of the Diſquiſitions, he has ſaid that he was on my ſide of the queſtion; for, ſays he, "we could not elevate the reſt of the veſicles, (and even then not all "of them) except by ſtrongly inflating one; ſo that we ſuppoſe the air to "have made a way from hence into the cellular membrane, by rupturing the "veſſels, and by this means to have ſwell'd the whole gland."

And how many times I have made uſe of the compreſſion of this gland, I have not only not ſpar'd to declare, but have, moreover, expreſsly refuted

(*n*) Dec. Obſ. Illuſtr. Anat. Obſ. 4.
(*o*) Idea Anat. Pract. Sect. 4.
(*p*) Memoir. de Math. & de Phyſ. preſentés à l'Acad. R. des Sc. Tom. 1. pag. 168, 169.
(*q*) Epiſt. de Monſtris & cæt. cum Tab. 3. Fig. 1, & 2.
(*r*) Opuſc. Pathol. Obſ. 6.
(*s*) Diſſert. de Thyroidææ, Thymi & cæt. Functionibus, not. 9. ad § 18.
(*t*) N. 30. & ſeqq. uſque ad 41.
(*u*) N. 36, & 37.
(*x*) Diſſert. cit. not. f ad § 8.

the reaſoning of thoſe who would attempt to prove it uſeleſs. How then is the caſe? Is it poſſible that the reaſon which another advances, and which I ſoon after reject, has been taken for mine by him who read it in a very curſory manner? Something of this kind, certainly, ſeems to have drawn into an error another certain perſon, who, in a kind of anatomical problem, not, perhaps, obſerving how that is to be underſtood, in diſputations, which is ſet apart for the ſake *of gratification*, as it were, by way of hypotheſis, and in the mean while is left as doubtful and undetermin'd; and thinking that I conteſted againſt Cowper in that paſſage, in which I continu'd to defend this very Cowper, did not heſitate to defend him againſt me; and not only this, but, like an exulting victor, took upon him to ſubjoin the following words: "Let Morgagni now ſay what, *&c.*" Upon reading which words, a friend of mine replied, And what ſhould Morgagni ſay but what I formerly heard him ſay, when ſome young men, who had very often found in the books of learned authors, that Morgagni had obſerv'd ſome certain things "after" Berengarius, Falloppius, Arantius, and other anatomiſts, but were ignorant that theſe authors were expreſsly referr'd to by Morgagni in thoſe obſervations, ſo as to confeſs by whom he had profited, and yet to ſhow what he had added to their diſcoveries; when, therefore, theſe young men were ſurpriz'd, that the paſſages of ſo many authors which I have quoted had eſcap'd his eyes or memory; his reply was, I would not have you be too haſty in judging.

But of myſelf I have ſpoken more than enough, and enough of tumours of the thyroid gland, when I have added this, that they who have remark'd a change of the voice from thence, may have different methods of accounting for this change, either from the influx of fluid into the larynx being obſtructed or chang'd, or from the diſtraction or compreſſion of the adjacent muſcles of the larynx, or from the weight that lies on this tube, and the bulk that forces againſt it: which I have very briefly hinted at in that ninth letter (*y*).

Yet far more violent ſymptoms may happen from the preſſure being too much increas'd, whether this fall upon the jugular veins, from whence the illuſtrious Haller (*z*) ſaw a ſoporific diſorder and an apoplexy, or principally confine the aſpera arteria, which the ſame author has obſerv'd, ſo that the breath could not be drawn without difficulty: and, indeed, ſometimes it could not be drawn at all; as others have obſerv'd, and Kerckringius (*a*) in preference to the reſt, who, mov'd by the ſuffocation of a miſerable woman, blam'd the phyſicians for having omitted to endeavour, by a diminution and diverſion of the humours, to prevent the tumour from increaſing ſo faſt, at leaſt, and preſſing the aſpera arteria againſt the vertebræ of the neck by its precipitate increaſe.

38. But now, as I have already written to you of tumours of the jugular glands (*b*), and of thoſe aneuriſms in the neck which are real (*c*); come, let us go on to the cheſt.

In reſpect to tumours of the breaſt of women, our Fabricius de Aqua-

(*y*) N. 40. (*z*) Obſ. cit. 6. (*b*) Epiſt. 22. n. 19. & Epiſt. 29. n. 12.
(*a*) Obſ. ex Sepulchr. ſupra cit. 9. § 1. (*c*) Epiſt. 26. n. 21.

pendente

pendente (*d*) denies, that he had ever ſeen thoſe which came on at the time of the milk's coming, not perfectly cur'd. Yet the patients frequently ſuffer various and very troubleſome inconveniences, before the abſceſſes, into which they degenerate, are perfectly heal'd. For which reaſon it were the more to be wiſh'd, that there were remedies at hand, by which women, after delivery, who abound with milk, but, for certain reaſons, cannot give ſuck, could ſafely drive away their milk, before it could be turn'd into abſceſſes.

There was a phyſician at Bologna who aſſerted, that this might be done by ſuſpending a little dried fiſh, which they call the hippocampus, or ſea-horſe, betwixt the ſcapulæ, eſpecially, as he himſelf ſaid, when taken at a certain time; wherefore, as he had two, he ſaid that the one was more efficacious than the other, and willingly lent the moſt uſeful of the two to thoſe who aſk'd it of him.

Among theſe was an ingenious young man, who applied to the ſtudy of medicine there with me, before the beginning of this century, and had already begun to practiſe it there: and this gentleman, having tried the effect of that fiſh upon two women, aſſerted that it had anſwer'd in both of them. But hearing nothing of this experiment for thirty years after and more; I, at length, found it ſpoken of in the poſthumous works of our Valliſneri (*e*), who ſays, that he had made the ſame experiment often, and that it had ſucceeded in the ſame manner: but in the contrary manner, if the woman who deſir'd to encreaſe the quantity of her milk, hung it on the oppoſite ſide, that is betwixt her breaſts; which, though in like manner affirm'd by that phyſician of Bologna, the fellow-ſtudent of mine, whom I have mention'd, had no opportunity of trying.

I am very ſorry that I neither made the enquiry formerly, nor Valliſneri has remark'd, whether the milk which was driven away in this manner, had been, in any point, detrimental to the women; for it might not be injurious at all, if it was driven away gently and gradually: and by this way of acting, the celebrated Degnerus (*f*) has very frequently ſeen that quickſilver included in a gooſe-quill, and worn, in the ſame manner, betwixt the breaſts, diſcuſſes the milk "without any injury;" and has not only been well-inform'd, that even among the women in Holland, this is "a ſafe, familiar, and ap-"prov'd" remedy. However, it is certain, that though at the time I am ſpeaking of, this ſecond remedy was unknown to the Italians, the chief phyſicians at Bologna did not uſe the firſt, either becauſe they did not believe its efficacy, or ſuſpected that it might be hurtful.

I therefore remember that Albertini reliev'd the complaint of two noble matrons, when their breaſts were ſo turgid with milk, that they could neither ſleep nor move their arms without pain, merely by diverting the milky fluid to the inteſtines; and that by a clyſter, which conſiſted of nothing elſe but broth, with ſome butter diſſolv'd in it, and the uſual quantity of ſugar. And this I take notice of becauſe both of them began to be ſo reliev'd, and with ſuch ſurprizing felicity, at the very time of going to ſtool, that their

(*d*) De Chirurg. Operat. ubi de Chir. Thorac.

(*e*) Opere Tom. 3. P. 4. Saggio Alfab. d'Iſtor. Med. alla voce Ippocampo.

(*f*) Act. N. C. Tom. 5. Obſ. 149.

breaſts

breaſts afterwards decreaſing in their ſize, neither of them had occaſion for any other remedy. And indeed Albertini affirm'd to me in a ſolemn manner, that by one of them was diſcharg'd a matter which he himſelf ſaw, and which was perfectly ſimilar to milk; ſo that this caſe brought into my mind that of the woman in whom, after weaning her child, the tumour of the breaſt decreas'd, as ſoon as ever the milk began to diſcharg'd into the mouth, inſtead of ſaliva: which obſervation, and the explication of it, that may be accommodated to this of Albertini, you will read in Nuck's *Sialographia* (*g*). But in what manner, in a certain epidemical conſtitution of lying-in women at Paris, of which the celebrated Malovin (*h*) has written, as on the third and fourth day after delivery, the breaſts not only were not ſwell'd, but were flaccid; how I ſay, after death, which happen'd betwixt the fifth and the ſeventh day, the milk could be found coagulated, and adhering to the external ſuperficies of the inteſtines; although they ſeem'd to have been inflam'd, and much affected with pain, and the diſeaſe had taken its origin from a diarrhæa, and from the continuance of it; is not eaſily to be explain'd; unleſs, perhaps, from that milky ſerum (which probably being redundant in the blood, was found in other places in ſome bodies, but in the cavity of the belly of all which were then diſſected) the thicker and more viſcid parts had ſubſided, and had adher'd to the ſubjected inteſtines.

39. But as to tumours of the breaſts, which do not ariſe at the time of the milk (although Hildanus produces examples even of theſe (*i*), and I have ſeen one, which were form'd at that time, and degenerated into a cancer) notwithſtanding our Fabricius (*k*) aſſerts, "that he had ſeldom ſeen any "which did not emulate the nature of a cancer;" yet, to omit others, and inſpect Ludovicus Mercatus (*l*) alone; you will be abundantly convinc'd, how many different ſpecies of tumours occur in the breaſts, which do not emulate the nature of a cancer.

But there are even others beſides what he deſcribes; as, for inſtance, that which was obſerv'd by me in a Venetian virgin, who was forty years of age. This woman, at a time when the menſtrua began to flow ſome days later than uſual, frequently us'd to have a tumour bigger than a pigeon's egg, (not unequal, nor changing the colour of the ſkin, but very hard, and creating pain in the motions of the neighbouring arm) ariſe in one of her breaſts, which was the left; ſo that if it had occupied the whole of the breaſt, it would have ſeem'd to be ſcarcely at all different from one of thoſe, which are deſcrib'd in the firſt place by Mercatus. Yet it was not altogether ſimilar to that which they call glandular, as it was not only not cut into little extuberances; but ſoon after, when the menſtrua appear'd, it was immediately reduc'd, without the application of any remedy, and without leaving any traces of it behind.

40. There are tumours alſo which ariſe within the breaſts, and which, when the menſtrual flux is at hand, are wont to be ſubject to troubleſome tenſions. Theſe being hard, and diſtinguiſh'd into certain knots, as it were,

(*g*) c. 2.
(*h*) Mem. de l'Acad. R. des Sc. A. 1746.
(*i*) Cent. 2. Obſ. 78.
(*k*) loco ſupra ad n. 38. indicato.
(*l*) De Mulier. Affect. l. 1. c. 17.

or ſometimes occupying the whole gland of the breaſt, not only continue, but, pains afterwards coming on, ſeem already to degenerate from a ſcirrhous nature into that of a cancer. Read thoſe deſcrib'd by the moſt excellent Trew (*m*), and you will learn how he extirpated them radically, but without the knife, within the period of the revolving year, ſo that not even the leaſt traces remain'd behind. But there are other tumours ſometimes, which, not only by adhering for a long time, and even for a very long time, but alſo by other marks, emulate the nature of a cancer, and yet are not cancers. To tumours of this kind the following hiſtory particularly relates.

41. There was at Padua a nun who had begun, thirty years before, firſt to labour under tubercles within one of her breaſts, which lay at a diſtance from each other. Theſe tubercles, at length, ſeem'd to be join'd together into one tumour, in the inferior part of the breaſt; and had ſuch an inequality of ſurface, and excited ſuch pains, that made it be univerſally conſider'd as a cancer. Laſt of all, the pains being greatly encreas'd, the tumour open'd of itſelf. Then from the manner of its opening itſelf, from the nature of the matter diſcharg'd, and from the other appearances, an ingenious and ſkilful ſurgeon judg'd it not to be a cancer, and undertook to cure it.

However, the cure never proceeded according to his wiſh, or expectation, till about the end of the year 1739; when he extracted from the tumour a tuberous body, of the bigneſs of a walnut, which he brought to me. This body conſiſted of many little pieces of bone, ſome larger, ſome ſmaller, diſpos'd in no certain or regular order, as I have ſeen them in the caſes of fracture. Betwixt the pieces was interpos'd a ſubſtance almoſt ſimilar to a ligament. This ſubſtance, when dried, grew black: but the bony fragments ſhow'd their whiteneſs. The breaſt was therefore heal'd up: and although the exulceration return'd, the virgin did not die thereof, but of quite another diſeaſe, and at the end of three years after the extraction of that bony body.

42. I ſuppos'd this body to have had its origin from the coats of the veſſels which are given to the breaſt for the ſake of the milk, or of the blood, or from other membranes that had become bony. And from thence, probably, another (which I found, when a young man, in the ſame bitch in both of whoſe kidneys, as is already written to you (*n*), I ſaw calculi) had likewiſe its origin. Nor will it be foreign to our purpoſe to produce, on this occaſion, obſervations made upon brute animals; ſince into this very ſecond ſection of the Sepulchretum (*o*) is transferr'd an account of tumours, which were found in a calf and a dog.

43. A bitch had one of her dugs, among the reſt, more tumid than it ought to be. This bitch being kill'd, I diſſected her through curioſity; and under the very teat I found a ſmall roundiſh body, unequal in its figure, made up of many little bodies, and of more than a cartilaginous hardneſs.

(*m*) Commerc. Litter. A. 1742. Hebd. 52. n. 2.

(*n*) Epiſt. 42. n. 17.

(*o*) l. 4. Obſ. 4. §. 3. & in Additam. Obſ. 12.

But

But a matter of a yellow colour, degenerating into lividneſs, with which two tubercles, of the form and magnitude of a pretty large lentil, that protuberated into the cavity of the ſtomach, were full, eaſily yielded to the preſſure of the fingers. The cyſts of theſe tubercles were betwixt the fleſhy and internal coat. And under the external membrane of the lungs I obſerv'd, in a certain place, ſome granules, as it were, of a kind of tartareous matter; which lay at a diſtance from each other, in ſeveral parts. And why theſe things ought not to be omitted here, I ſhall immediately ſay.

44. For as, in the ſame bitch, I found calculi in both kidnies; beſides a very conſiderable diſorder in one of them, which I juſt now put you in mind of; I did not think it proper to conceal the matter in the lungs, which was already of a tartareous nature; and that in the ſtomach likewiſe, which would perhaps have been of the ſame kind: ſo that if you ſhould be diſpoſed to ſuſpect, that the body which lay under the teat was of the ſame matter, in conſequence of its abounding ſo much in the body, rather than of a bony nature, you are at liberty for me to ſuſpect it: although neither in the bitch, nor in that nun (*p*), did it ſeem to me to be tartareous; and there is extant in the Sepulchretum (*q*), an example of another nun, in whom the breaſts, as far as appear'd from one of them, were found to be "univerſally bony," the ſkin only excepted.

Yet, as it is controverted even in reſpect to the arteries themſelves, as I have taken notice to you in former letters (*r*), whether that which ſeems to be bony, be really bony, or only tartareous; and as, in the caſes in queſtion, ſuch examinations were not made as are ſufficient to ſhow clearly of what nature the concretions in thoſe tumours were; I will ſo much the more readily leave it undetermin'd; becauſe tartareous, or ſtony concretions, or, as Celſus (*s*) ſays, "certain bodies ſimilar to ſtones," are ſometimes found in other tumours; as he himſelf teaches us, and as the Sepulchretum in this ſection ſhows (*t*); but particularly in tumours of the breaſts: ſo that in a widow, of whom the celebrated Baſſius (*u*) gives the hiſtory, the bodies contain'd in theſe parts, "by their mutual attrition and colliſion againſt each other, gave forth a "ſound like little ſtones;" and I myſelf have ſeen in a man, a matter ſimilar to indurated lime.

For the breaſts of males ſometimes grow out into tumours alſo, as well as thoſe of women; one of which I have read the deſcription of by Bidloo (*x*); and Heiſter (*y*), who quotes Bidloo, aſſerts that he alſo had made a ſimilar obſervation; and the celebrated Jo. Mart. Wolffius (*z*) has added another; and I once ſaw the beginning of this diſorder in a goldſmith, to whom nothing was of ſo much ſervice as keeping the arm on that ſide quiet for a long time together, in the manner preſcrib'd by me: and I again ſaw it in a perfect ſtate, but containing the ſame kind of matter which I ſpoke of juſt now: and in this manner did the caſe appear.

(*p*) ſupra, n. 41.
(*q*) l. 3. S. 21. in Additam. Obſ. 61.
(*r*) Epiſt. 27. n. 20. & ſeqq.
(*s*) De Medic. l. 7. c. 6.
(*t*) Obſ. 15. §. 4. & Obſ. 17. §. 1.
(*u*) Dec. 2. Obſ. 6.
(*x*) Dec. 2. Exercit. Anat. Chir. 5.
(*y*) Inſtit. Chir. P. 1. l. 4. c. 17. n. 3.
(*z*) Commerc. Litter. A. 1742. Hebd. 44. n. 2.

45. A noble and learned man, the ſon of that matron whoſe diſeaſes and diſſection I deſcrib'd to you, when I treated of vomiting (*a*), being in his thirty-firſt year, had a very ſmall gland, as it were, begin to be prominent in the upper part of the right breaſt. This gland, increaſing gradually, within about a year grew out into a tumour of the bigneſs of a fiſt, and very hard, but wanting all the peculiar marks of a deprav'd nature.

This tumour, about the beginning of the year 1742, and in the fourteenth month from the time of its beginning, ſpontaneouſly open'd itſelf; and ſhow'd within the cortex, or ſhell, that was made up of the integuments, and fleſhy fibres, nothing but a matter which, in ſome places, reſembled a hard calcareous concretion, and in others, a ſofter concretion of the ſame kind.

46. I then even ſaw and touch'd this matter, as it lay within the gaping tumour, being call'd into conſultation upon the caſe, together with ſome other profeſſors of the college.

As his father and grand-father had been greatly ſubject to the gout, but this patient never, except that ſometimes he had juſt obſerv'd a ſlight and ſhort pain in the great toe of one foot; it ſeem'd reaſonable to all of us to ſuppoſe, that the tartareous matter, which in them had fall'n upon the mucilaginous glands of the joints, had, in this gentleman, fall'n upon the mammary glands; perhaps becauſe the other parts, being very firm, had given too great reſiſtance; and this the more eaſily, as I obſerv'd the ſternum, when it had ſcarcely meaſur'd a third of its length from the upper part, to ſubſide ſuddenly, and in a great degree; for which reaſon I conjectur'd that, in conſequence of the mammary veſſels being inflected in an angle here, at the ſides of the ſternum, the motion of the blood through the breaſts was become very ſlow.

But this opinion, in regard to the gouty matter of that tumour (which was ſo much the more probable, becauſe Preuſſius (*b*) had ſeen a gouty matter "in the form of a calx," which could no longer be depoſited in the extreme joints of the limbs, come out through an ulcer of the breaſt) made moſt of us very cautious in giving our opinion; as we fear'd, for inſtance, leſt when the tumour was cut out, and the ſeat of it heal'd up, the matter ſhould perhaps turn itſelf to other and more noble parts; ſince the obſervation of Albertini (*c*) had alſo lately ſhown, how many tumults had been excited in the conſtitution, and eſpecially in the belly, by the repulſion of the gouty matter from the lower limbs; which were ſtrengthen'd by anointing them with the *Oleum Petrolei*, till it was, at length, diſcharg'd by the way of the inteſtines, in ſuch a manner, that it was ſurprizing "what, and how many, "concretions, made up of lime, or of gypſum lately cemented, and nearly "ſimilar to the matter from whence the gout is produc'd," were diſcharg'd that way.

Since, therefore, for theſe reaſons, the advice of thoſe who were for waiting did not at firſt diſpleaſe, and the matter was gradually taken away from the tumour; behold a new fever came on; and to that matter which re-

(*a*) Epiſt. 30. n. 7.
(*b*) Eph. N. C. Cent. 3. Obſ. 17.
(*c*) Comment. de Bonon. Sc. Acad. Tom. 1. in Opuſc. ubi de Cortice Peruv.

main'd, a new matter of the ſame kind was, in fact, added. After this, however, the patient being quite wearied out with waiting, committed himſelf to the care of a reſolute ſurgeon; by whom, as the patient himſelf earneſtly deſir'd, the tumour being entirely cut out, and the wound brought to a cicatrix without any difficulty, he ſo far recover'd as to be ſeiz'd with no diſorder afterwards that I know of: ſo ſucceſsful, ſometimes, in medicine is an unreaſonable boldneſs.

47. To what kind of tumours thoſe parts of the breaſts which were harder than natural, and which, though a brown, green, and black humour was expreſs'd, I found to be pretty ſound to appearance, in that diſſection which was deſcrib'd to you in the twenty-firſt letter, under number forty ſeven; I ſay, to what kind of tumours theſe belong'd, or rather would have belong'd, if the woman had liv'd for a conſiderable time longer, I cannot eaſily determine.

For although you might then refer thoſe tumours only to that humour which diſtended the lactiferous veſſels, yet who can for a certainty affirm, that a humour ſo very preternatural and deprav'd would not have produc'd ſome tumours of a very bad nature, by its long confinement there? Indeed, I have read of women that were ſeen by Riverius (*d*), and by Lanzonus (*e*), from whoſe breaſts a green milk was diſcharg'd; and two are ſpoken of in the *Ephemerides Naturæ Curioſorum* (*f*), and in the *Commercium Litterarium* (*g*), one of which had black and very acid milk; and the other, as often as ſhe pleas'd, could preſs out of both breaſts "a kind of very thick fluid, of a "colour extremely black;" and this being receiv'd upon linnen rags, within twenty-four hours "became green like verdigreaſe, and at the ſame time "ſeemingly put on a corroſive nature."

But although I ſee that moſt of theſe women were not at all healthy, yet I do not know what was the end of any one of them; and whether the breaſts in particular, if either the milk did not flow out, or what remain'd of this kind of humour was not preſs'd out, were ſeiz'd with any pain, or, finally, with any tumour of a malignant nature.

You perceive that at preſent I ſpeak of the cancer, a tumour which is ſo often form'd, and eſpecially in the breaſts, and which is a caſe the malignity whereof is as evident as the cure is difficult: ſo that Johannes Bapt. Corteſius (*), when he wanted to ſhow "how far it does not always follow, that "a diſeaſe which is known may be immediately cur'd;" and this "chiefly on "account of its malignity;" has, with great propriety, made uſe of the cancer in particular, as an example, "which, although it be known by all, "is, nevertheleſs, ſeldom cur'd by any."

Indeed, it does but rarely happen that the cure is in every reſpect happy. And I have very often ſeen thoſe conſequences which Celſus (*h*) has foretold; that whether it be cut out by the moſt experienc'd and ſkilful ſurgeons, "it "has, nevertheleſs, return'd after the wound was cicatriz'd," in the ſame or ſome other place; or any other perſons "have made uſe of cauſtic appli-

(*d*) Cent. 2. Obſ. Medic. 100.
(*e*) Animadverſ. var. ad Medic. & cæt. 125.
(*f*) Dec. 2. A. 4 Append. n. 5. XLIII.
(*g*) A. 1734. Hebd. 1. n. 1.
(*) Miſcell. Medic. Epiſt. 6.
(*h*) De Medic. L. 5. c. 28.

"cations."

" cations," and put the poor women to the moſt ſevere torture for a long time together, that the event of theſe caſes has been worſe, or, at leaſt, not better.

For there was, even amongſt us, before the volume of the Memoirs of the Royal Society at Paris, for the year 1739, came out, a perſon who, by the application of a cauſtic herb, was ſaid to deſtroy cancers radically. But whether this was the *dentellaria* of Rondeletius, as we conjectur'd from ſome marks; for the perſon himſelf conceal'd it as much as he poſſibly could; or whether it was any other, the man at firſt got himſelf a great reputation, as is frequently the caſe; but the ſucceſs of his cures not correſponding to his fame, he was ſoon after deſerted.

Whether it has continu'd to anſwer among the inhabitants of Montpelier, I am ignorant: among us, at leaſt, phyſicians and ſurgeons are more confirm'd in their opinion of preferring exciſion by the knife, when they are at length overcome by the entreaties of the patients (who do not at all conſider thoſe things that have been ſaid above (*i*)) and compell'd to undertake the cure; ſince, if this method be not attended with a leſs ſevere pain, that pain is at leaſt ſhorter in its continuance: ſo that by this means the prolonging of life, at leaſt, if not life itſelf, coſts the patients leſs, although the cancer ſhould return afterwards; and they are free, in the mean while, from the continual and excruciating tortures of a very filthy diſeaſe.

But I forbear to ſay at preſent, how many, and what circumſtances are requir'd in patients, in order to give us reaſonable hopes that their life may be prolong'd. Some of theſe requiſites, and, in like manner, many circumſtances diametrically oppoſite thereto, you will collect from an obſervation which I ſhall give you here in particular, though I might have given it on other occaſions. For from the ſame obſervation you will ſee what was the ſtructure of a ſcirrhus degenerating into a cancer; and will, at the ſame time, ſee it confirm'd, " that a contuſion, which would be of no importance in " the ſkin," may, to uſe the words of Boerhaave (*k*), " produce the worſt of " ſcirrhi in a conglomerated gland;" and, in like manner, " that a cancer is " with great difficulty cur'd in a melancholic woman."

For there are, even among us, ſome women of this temperament; but they are not all ſo: nor can I conceive who could impoſe upon that great man in ſuch a manner as to aſſert (*l*), " that the Italians, to the eighteenth year of " their lives, were lively and playful; but that after the thirtieth year they " all became ſad, moroſe, melancholy, and afflicted with the piles." However, this obſervation was communicated to me, ſome years ago, by that learned and reſpectable man Jo. Bapt. Charburi, formerly my much-eſteem'd auditor, but now firſt regius profeſſor of the practice of medicine at Turin.

48. A ruſtic woman, about fifty years of age, happen'd to have a blow upon her left breaſt: and therein, after near a month, a tumour diſcover'd itſelf, which they in vain hop'd to have diſſolv'd by fomentations, or prevented from growing larger by the compreſſion of a hollow plate of lead. For it increas'd in ſuch a manner, that within the ſeventh month after receiving

(*i*) N. 16. (*k*) Prælect. in Inſtit. § 903. (*l*) Ibid. ad § 897.

the blow, from the upper, and at the ſame time from the external part of the breaſt, where it was much thicker, harder, and of a more irregular figure, it now deſcended below the areola: the nipple of which lay hid, almoſt univerſally, among ſome tranſverſe rugæ.

Under the neighbouring axilla, other rugæ, ſimilar to theſe, were obſerv'd: there was a pain at the axilla, when the ſhoulder was lifted up; and the whole of that limb was affected with an œdematous tumour. Which circumſtances, and, beſides theſe, the aduſt and melancholic temperature of the woman, were immediately repugnant to the opinion of thoſe who propos'd the exciſion of the tumour. On the contrary, the robuſt body of the woman, and her intrepid mind, which was prepar'd to undergo the operation, were favourable to their propoſal; which was, moreover, urg'd by other things, but in particular by this, that the pungent pains, which increas'd upon the patient in proportion as the tumour had increas'd, were now become extremely more violent, and were attended with almoſt continual watchings.

The exciſion of the tumour was, therefore, undertaken; and what appearances this had internally, will be ſaid below. The operation ſeem'd to have been perform'd ſucceſsfully, and according to the opinion of thoſe who propos'd it, till the ſeventh day, at which time the wound was always of a lively colour, and ſoft. But after this time it was ſeiz'd with an inflammation and corruption, which not only conſum'd all the cellular part of the breaſt that remain'd, but that part of the pectoral muſcle, alſo, which lay beneath the breaſt, and that part both of the external and internal intercoſtals which was oppoſite thereto; ſo that the pleura appear'd to be naked, betwixt the ribs, in that part, to the extent of about five inches, that is, from the ſternum tranſverſely.

However, the ulcer was at length cleans'd, and for five days was ſoft; at which time there was a laudable pus; and the pulſe was not quick, except in the evening, and this only for a few hours; all the other circumſtances being nearly in their natural ſtate, if you except an obſtinate coſtiveneſs of the belly, which was now-and-then obviated by clyſters.

But after thoſe days, every thing chang'd for the worſe. The ulcer, in which was ſeen the cartilage of the fourth rib, of a black colour, and in a manner disjoin'd from the ſternum, grew dry, and diſcharg'd a ſmall quantity of an ichorous pus, which had a very diſagreeable ſmell: and the œdematous tumour of the neighbouring limb, which had loſt its motion, and almoſt its ſenſation likewiſe, on the firſt days after the exciſion, except that both of them continu'd in the hand nevertheleſs, was increas'd: the lower limbs were alſo ſwell'd in the ſame manner: and, at the ſame time, the frequency of the pulſe, the thirſt, and the watchings, were increas'd. To theſe ſymptoms were added a diarrhœa, a loſs of appetite for food, a decay of ſtrength, a perpetual ſleepineſs, a difficult and frequent reſpiration. And, finally, the laſt-mention'd ſymptoms were ſucceeded by four long febrile paroxyſms, which were violent, and join'd with a rigor; one following the other at the interval of about ten hours: and by theſe the woman was carried off.

The body was every-where flaccid and lax; yet the lower limbs, even when the integuments were cut into, had no remains of the œdematous tumour.

The belly had all the viſcera of its cavity in a tolerably ſound and natural ſtate, if you except the ſpleen being a little larger than is natural, blacker, and more lax; and, on the other hand, the uterus being very hard, and giving reſiſtance to the knife.

Both the cavities of the thorax were almoſt full of water, but particularly the left: and therein the lungs, on the ſide which correſponded to the ulcer, were dry, and almoſt ſcirrhous, adhering cloſely to the pleura in that part, which adher'd much more cloſely to the ribs, and was become callous, as it were, in that place where it had been expos'd to the external air. Then examining the heart, the cavities on the right ſide of which contain'd ſomething polypous, we return'd to the external parts: and all the axillary glands on the left ſide were found, not only to be ſomewhat thicken'd, but alſo to be chang'd into a heap of ſcirrhous tubercles, of a very great firmneſs, and a livid colour; and this was contain'd in the neighbouring cellular membrane, which was itſelf, alſo, converted into a hard ſteatoma.

And from theſe tumours, whereby the neighbouring veſſels and nerves were compreſs'd, was underſtood the cauſe both of the imperfect paralyſis and the obſtinate *œdema* under which that limb had labour'd, and alſo of the pain at the axilla when the ſhoulder was lifted up; and, finally, of the imminent danger leſt another tumour, of a very bad nature, ſhould grow out under the axilla after the former had been amputated from the breaſt.

This tumour, being examin'd immediately after the exciſion, and after the fat which adher'd to it was taken away, was found to be of a figure approaching to an oval, the larger axis of which was equal to about an inch and a half. With this tumour were continu'd three or four others, of different magnitudes, but all ſmall. At the center of theſe and of the former, blood which was putrid, and of a pale colour, was found: and this blood was ſurrounded by a matter of a middle nature betwixt puriform and ſebaceous.

49. Some things which were obſerv'd with accuracy and ſkill, during the reſpiration of the woman, in the pleura, in the ribs, and part of the intercoſtal muſcles, when theſe lay expos'd, I have paſs'd by, not becauſe theſe circumſtances were leſs worthy of notice, but becauſe they do not immediately relate to the intention of this letter. But that hiſtory which is deſcrib'd by Gahrliepius (*m*), is one of the firſt that relates to the ſubject of this letter, as it has many circumſtances which may be compar'd with that I juſt now gave you, and this, moreover, which was found in the diſſection of the body; I mean, that the cancer which had been cut out from one breaſt, "had propagated its virus from thence to the other breaſt, alſo, in a tranſ-"verſe direction, over the bone of the ſternum;" and this in a latent manner, ſo that nobody ſuſpected it during the life of the woman.

But now, as we are haſtening on to the remaining tumours both of the thorax and the belly, that which I ſaw in the clavicle, I think, may with more propriety be deferr'd till I treat of exoſtoſes below (*n*). And as to thoſe which relate to aneuriſms of the great artery, that raiſe up the parietes of

(*m*) Eph. N. C. Dec. 3. A. 5, & 6. Obſ. 163. (*n*) Vid. n. 58.

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the thorax or abdomen, as they have been already ſufficiently ſpoken of (*o*) by me, when I treated of the internal diſeaſes whereto they belong, I am not at leiſure here to repeat them, in imitation of the Sepulchretum.

And indeed, if by chance, as in the living cook I diſtinguiſh'd an aneuriſm of an intercoſtal artery, from the pulſation being very much produc'd in the longitudinal direction of the artery, and the tranſverſe direction of the body, but never equalling the whole interval, which was betwixt the two ribs in its latitude; ſo I had alſo ſeen that interval rais'd up into a tumour at length, as Lanciſi ſaw it (*p*); and in the body after death, as happen'd three or four times to Ruyſch (*q*), had found ſo ſmall an artery expanded to the ſize of a hen's egg; I do not know whether I ſhould not have plac'd it among the tumours of the thoracic cavity, rather than among theſe I am ſpeaking of now; though it would have been more allowable to have done the latter, than, as in the Sepulchretum, to refer to this claſs, tumours of the viſcera themſelves, whereby the abdomen is forc'd outwards: of which tumours (*r*), and of the herniæ of the abdomen itſelf (*s*), and of the hydrorachitis alſo (*t*), I have written to you in other letters.

There are, however, now and then, certain tumours of the abdomen, which, although they really belong to the abdomen itſelf alone, ſeem to belong to the viſcera. One of that kind I ſaw in a pious and learned prieſt, prominent in the manner of a large hemiſphere. This tumour being open'd, and having diſcharg'd a great quantity of matter, of a very filthy odour, was obſerv'd by the ſurgeon, upon introducing his probe, to penetrate as far inwardly, as it had protuberated outwardly; ſo that it was generally ſuppos'd, without any doubt, to belong to ſome one of the viſcera. There was not, however, any diſcharge of matter which confirm'd this opinion, nor were there any marks of a viſcus being injur'd; and finally, the perfect cure of the patient, who liv'd in a very good ſtate of health many years afterwards, clearly ſhow'd, that what had been collected together in this very large tumour, had, in fact, forc'd inwards, in an incurvated manner, the muſcular parietes of the abdomen, and the peritonæum, far into the cavity of the abdomen; but had not perforated them, nor yet brought about a communication betwixt the cavity of the tumour and the cavity of the belly, and much leſs a communication betwixt the cavity of the tumour and any of the viſcera.

50. Tumours of the teſtes, and the involucra, wherewith they are ſurrounded, of which I can write ſomewhat more, you remember have been treated of by me in a former letter (*u*).

But as to thoſe that relate to the penis, anus, and the genital parts of women, although I have ſeen many of them, yet as I never had any opportunity of diſſecting them, there is ſcarcely any thing for me to hint at. I was preſent when Valſalva amputated a cancerous tumour into which the glans, and a very large part of the penis adjoining, had grown out. The two cir-

(*o*) Epiſt. 26. n. 19. & Epiſt. 40. n. 26.
(*p*) De Aneuryſm. l. 2. c. 2. Propoſ. 28. cujus, & præcedentis titulo ne fallaris, faciet Propoſ. 25.
(*q*) Theſ. Anat. 9. n. 5.
(*r*) Epiſt. 36. & 39.
(*s*) Epiſt. 34.
(*t*) Epiſt. 12.
(*u*) 43.

cumſtances

cumſtances which he was afraid might happen, did neither of them happen. One was, leſt the very ſmall part of the penis which was to remain behind, ſhould happen to be immediately drawn inwards. And the other was, leſt, though the penis ſhould remain in its uſual ſituation, the arteries ſhould be drawn inwards nevertheleſs. And as he intended, which he really did, to tie theſe up by paſſing a needle and thread round them; this operation would have become extremely difficult by either of theſe circumſtances happening.

Againſt the firſt-mention'd accident he had before provided: and if the ſecond had happen'd, he then would have been oblig'd to do what he was very unwilling to do. For he always ſtudied to diminiſh, as much as was in his power, the painful tortures of thoſe whom he cur'd by the knife. For which reaſon he was not willing to make uſe of fire in this caſe, as Scultetus did (*x*), or leave any of the diſeas'd part behind, as the ſame author did; nor yet apply a tight ligature round the penis, and above the diſeas'd part, in ſuch a manner, that whatever was below the ligature might die in a ſhort time: for how much pain is brought on in this caſe, by ſuch a conſtriction, the thirtieth obſervation of Ruyſch (*y*) ſufficiently ſhows.

Yet I would not have you believe, for this reaſon, that other very experienc'd ſurgeons, among whom are Heiſter (*z*) and Benevoli (*a*), have preferr'd this method of conſtriction without very good reaſons. For although Valſalva perfectly cur'd this patient of his; yet there was ſome danger on one of the firſt nights, by reaſon of the blood's beginning to open itſelf a paſſage, if an attendant who, according to Valſalva's order, lay juſt at hand, had not very ſpeedily prevented it in the manner that had been previouſly ſhown him. This patient was of an advanc'd age.

Another patient was of an advanc'd age alſo, from whoſe anus an excreſcence, of a very bad kind, and ſimilar to a kidney, both in ſize and ſhape, hung down by two depreſs'd peduncles. This excreſcence being taken off by another ſenior ſurgeon, when I was a young man, and look'd on, by drawing it down, and cutting the peduncles acroſs; and the lower part of the inteſtine, from whence they had grown out, having immediately drawn itſelf upwards, and conceal'd itſelf both from his hands and eyes; I at firſt ſaw that the man was confus'd, as he had expected no ſuch thing, although none had had greater experience than he, and he was really eminent in his art; yet ſoon after, as no great quantity of blood was diſcharg'd, his courage being reviv'd, he inſerted a middle-ſiz'd tent, daub'd over with the white of an egg, and ſprinkl'd with powders that have a ſtrong aſtringent virtue, and departed from the patient.

But ſcarcely had a quarter of an hour paſs'd, before blood began to be diſcharg'd in a conſiderable quantity; and what ſhow'd that it had been diſcharg'd into the cavity of the inteſtines, in a much greater quantity, the patient began to beg that the tent might be taken away, becauſe he could no longer reſiſt the vehement deſire he had of going to ſtool; and his pulſe had ſunk in a very great degree. The ſurgeon being call'd again took away the

(*x*) Obſ. Chir. 60.
(*y*) Cent. Obſ. Anat. Chirurg.
(*z*) Inſtit. Chirurg. P. 2. S. 5. c. 132.
(*a*) Obſerv. 27.

tent, and this was follow'd by very large pieces of coagulated blood. Then the ſurgeon, introducing his finger, compreſs'd the wound thereby, for a conſiderable time; nor did he remove it, till a tent was prepar'd to be inſerted, daub'd and ſprinkl'd over with the ſame medicines as the former, but much thicker, which ought to have been attended to at firſt: and by this means the blood was at length, with much difficulty, check'd.

Yet theſe things I have taken notice of for no other reaſon, but that you might underſtand what was the opinion of Valſalva, in regard to the method of amputating the penis, at that time ſo much controverted; and, in like manner, that every thing which may happen during an operation, is to be well conſider'd and provided for, even by the oldeſt and moſt experienc'd ſurgeons. However, in regard to the firſt method of cure, I would have you read Benivenius (*b*) among the ancient authors: and as to the ſecond, Heiſter among the more modern authors (*c*); for you will find in both an example of a ſucceſsful cure.

In regard to condylomata of the vagina in women, there may not only be many cauſes thereof, but I ſuſpect that one of them is ſometimes ſuch a cauſe as exiſts from the original formation; and of what kind this is will appear from the following obſervation.

51. A young virgin, of fifteen years of age, having been, for a long time, in a cachectic habit of body, was as length ſeiz'd with a very violent diſorder, and paſs'd the latter days of this diſorder, and of her life, in the hoſpital at Padua, in ſuch a manner, as, to all appearance, to die of an inflammation of the lungs, which happen'd about the end of the year 1750.

When the thorax was open'd, a dropſy of that cavity appear'd; and in the lungs was ſcarcely any appearance that argu'd a ſlight inflammation thereof.

The genitals were the principal parts which were taken away from the belly. And though in demonſtrating the ſtructure of theſe parts, I found it, in almoſt all of them, to be nearly natural; yet theſe few things, which were preternatural, I did obſerve. At the foliated extremity of one of the Falloppian Tubes was an hydatid. From the orifice of the urethra a ſmall reddiſh body was prominent; and this, when cut into longitudinally, I perceiv'd to be nothing elſe but the internal coat of that meatus, which being univerſally black above, from the ſubjected veſſels being diſtended with blood, had inverted itſelf outwards at the lower part, and become protuberant: and this I remember alſo to have ſeen in another woman, of whom I ſhall write (*d*), when I treat of lameneſs; and I remember to have taken notice of both, when on the ſubject of difficulty of urine (*e*), and to have enquir'd into the cauſe of that little diſorder.

The vagina being open'd at length, and being found to be ſmear'd over with a whitiſh and thickiſh humour, I met with that appearance which gave occaſion to my writing this obſervation in the preſent place. That is to ſay, near to one ſide of this cavity, at a finger's breadth above the hymen, the anterior and poſterior ſurface of the vagina were tied to each other by a kind of ſhort band, of a moderate breadth and thickneſs, made up exactly of the

(*b*) De abdit. morb. & ſanat. cauſ. c. 68.
(*c*) Eph. N. C. Cent. 8. Obſ. 67.
(*d*) Epiſt. 56. n. 21.
(*e*) Epiſt. 42. n. 42.

ſame

ſame ſubſtance as the vagina itſelf, and furniſh'd, in the ſame manner, with a rugous ſurface; ſo that it was manifeſt this connection had exiſted from the firſt formation, eſpecially as no trace of foregoing eroſion appear'd, either above or below. Before I cut this band aſunder, the vagina was very narrow on that ſide; but when it was divided, this cavity immediately extended itſelf into a proper breadth.

52. But if this virgin had been married, you naturally conceive that this band muſt have been ruptur'd, either by the embraces of the huſband, or by the birth of the fœtus, and might afterwards have grown out into a condyloma, by being nouriſh'd in this very moiſt place. When I diſſected this body, at leaſt, it brought to my mind the caſe of a young married woman, from the orifice of whoſe vagina I ſaw two condylomata hang down, after a very difficult birth, ſimilar to this band if it had been ruptur'd in the middle, and had grown out a little after the rupture; and ſimilar even in this circumſtance, that they did not ariſe at a larger interval above that orifice than this band did.

53. Tumours of the limbs ſtill remain to be ſpoken of. But as almoſt all theſe are nearly common to both the upper and lower limbs, I chooſe chiefly to inſiſt upon thoſe which are ſeated upon the lower limbs, ſome of a very large, and ſome of a moderate ſize. That was of a large ſize which diſtended the thigh of a nobleman to ſuch a degree, and in the manner of an abſceſs, that Valſalva, who was call'd to undertake the cure, was afraid to open it, in which caution he was very happy; for in a few days the whole of it vaniſh'd away ſpontaneouſly, and the patient recover'd ſo perfectly, as to live many years afterwards, in a very good ſtate of health; and affirm'd the ſame frequently to the phyſicians and ſurgeons, from whom I had this relation, and even affirm'd it himſelf to me, who was one of his intimate friends; all of us being ſurpriz'd whither ſo great a quantity of matter, which evidently fluctuated under their hands, had been carried, and that without any injury.

But it was ſuppos'd, that Valſalva had been deterr'd from opening a tumour of that kind, in the firſt place, by this conſideration, leſt it ſhould be as difficult to heal it up as it was eaſy to open it; and in the ſecond place, leſt, by reaſon of the immoderate diſcharge of matter, the patient ſhould ſink, either during the ſpace of a very long cure, or at the very firſt time of inciſion; as if it had not been in his power, at that time, only to take away as much as the ſtrength of the patient could bear.

And upon my replying in this manner, I remember that it was aſk'd of me, as happens in private conferences, what was the reaſon that, if a ſurgeon ſuffers the whole contents of a very large tumour to be immediately diſcharg'd, the patients frequently fall into a ſwoon: and I remember to have anſwer'd, that ſome perſons choſe to attribute this to the blood ſuddenly ruſhing into the veſſels of that part, in a very great quantity, in conſequence of their relaxation, by the weight of the incumbent matter being taken off; ſo that the quantity which returns to the heart is much leſs than it ought to be. And in this manner did I anſwer what appear'd to others rather than to myſelf; firſt, becauſe in all tumours, there are not large veſſels to be compreſs'd; and, in the ſecond place, becauſe thoſe neighbouring veſſels which

the uterus compreſſes when diſtended with a nine months fœtus, are certainly large, and that compreſſion, in a very happy and quick birth, is taken away in a point of time, and yet faintings do not for this reaſon come on; ſo that we are under a neceſſity of ſeeking out another way of accounting for it, or at leaſt it ſeems that ſome other anſwer ought to be added to the former.

But there are other tumours of the limbs, even ſtill larger than that I have ſpoken of: which you may in vain deſire to open; for what they contain is in great part not fluid, nor can be turn'd into pus; and, indeed, frequently the ſtructure of the muſcles that are interpos'd is vitiated, and chang'd to a ſurprizing degree. You will ſee ſome deſcrib'd in a diſſertation (*f*) of Jo. Henſelerus, wherein many examples of tumours of the ſame kind are pointed out; ſome of which are not ſo recent but they might have been added to the Sepulchretum, and be join'd to that of Wedelius (*g*), which is omitted in this diſſertation.

You will alſo read of many in a diſſertation that had before come out, of Alexander Camerarius (*h*), and ſome in a volume of the *Diarium Italorum Litteratorum* (*i*), which had been publiſh'd before either of the other; for, even amongſt us, theſe examples are not very rare, but pretty frequent, and ſurprizing in their nature. I myſelf have alſo ſeen another in this place, which was large, although not to be compar'd, by any means, with the preceding, wherewith the leg of a nobleman was exceedingly diſtended. And this I pronounc'd it to no purpoſe to open, for the reaſons juſt now given: nor was I deceiv'd in the event, as the patient would nevertheleſs have the tumour open'd afterwards.

However, I cannot be induc'd to believe that the arm of a man, whereof Sancaſſanus wrote to Valliſneri (*k*), was turgid with a tumour of this, or of a ſimilar kind; for the primary ſurgeon having made an inciſion into it, ſo great a quantity of blood burſt forth therefrom, that the operator was ſtruck with aſtoniſhment, and ſuppos'd the man to be about to die inſtantly: but the flux of blood ceaſing, a ſerum was diſcharg'd for many weeks, from the effect of which diſcharge the arm was reduc'd to its proper bulk; and the man was troubl'd with no inconvenience of the limbs as long as he liv'd, though he liv'd many years.

This caſe rather brings to my mind that which you read in Xenophon (*l*) and Plutarch (*m*), of Ageſilaus, king of the Lacedæmonians, that, as he was aſcending, "blood, though from the rupture of what vein is uncertain, flow'd "down from his body into the ſound leg," for he was lame of the other; "and when the parts about the calf, and the ſkin, were exceedingly ſwell'd, "and intolerable pains came on, a certain Syracuſan phyſician open'd a vein "in the leg near to the ankle; and when the blood had once begun, it con- "tinu'd to flow night and day, and, in ſpite of all their endeavours, they "could not reſtrain this hæmorrhage, till Ageſilaus at length fainted away,

(*f*) Hiſt. brachii prætumidi § 14.
(*g*) Sect. hac 2. Obſ. 17. § 3.
(*h*) Hiſt. pedis tumidi.
(*i*) Tom. 29. art. 4.
(*k*) Opere Tom. 1. P. 6.
(*l*) Rer. Græcar. l. 5. verſus fin.
(*m*) in Vita Ageſilai.

"and

" and then the blood ceas'd to flow;" ſuch a ſtate of health being the conſequence of it, as confin'd the king to his bed the remaining part of the ſummer and the whole of the winter. Which caſe, though in other reſpects worthy of attention, I do not remember whether any learned phyſician has conſider'd.

It is likewiſe uncertain from what veſſel the blood flow'd, in order to make up two large tumours mention'd by Marcus Aurelius Severinus (*n*), and the famous Albertus Haller (*o*). The one, indeed, had diſtended " the arm quite " to the upper part of the ſhoulder, and to the anterior part of the thorax " which lies about the arm-pits," into ſuch an immenſe bulk as the figure which is added, and the pain whereof the man died, mutually demonſtrate. But the other, having ariſen " ſuddenly after a very great pain, yielding to " the touch of the hand, and vaniſhing away when compreſs'd," extended itſelf from the ſcapula almoſt to the tenth rib. As to the firſt, however, we could not ſo much as ſuſpect what it contain'd, if he had not propos'd it among the number of ſanguiferous abſceſſes, or " aneuriſms;" as Severinus ſays nothing beſides thoſe words, and does not ſeem to have diſſected it. But the other we know to have been fill'd with blood, as the man was kill'd by the diſcharge thereof, not many hours after the inciſion; and a great quantity was found in the tumour, afterwards, when it was diſſected.

However, if it could have been added, in reſpect to both of the tumours, that they had pulſated in the beginning at leaſt; as in regard to another which contain'd blood, and " cover'd the knee univerſally," and which was ſhown to Preuſius (*p*) at length, after an interval of ſome years, this author has ſlightly himted; there would have been leſs room for doubt left to thoſe who might have read the remarks upon bloody tumours communicating with the ruptur'd trunk of ſome vein, which, as is taken notice of above(*q*), are inſerted in Valſalva's treatiſe of the human ear, and in the thirteenth of my *Epiſtolæ Anatomicæ*.

54. On the contrary, there are tumours which we have heard are eaſily cur'd, though in a manner not readily to be explain'd; and this is the reaſon why I do not think they ought to be paſs'd by. A phyſician of Verona, a man of eminence and reputation, related to me, and to ſome learned friends, who happen'd to be with me at Venice in the year 1707, the following hiſtory. When he was in the place of his nativity, and that very lately, a horſe of great value had both his hinder legs ſwell'd to a very great degree, at the knee-joint, with a watry tumour; but a watry tumour which was hard, and attended with pain: and when no other remedies were of any advantage, that there was a horſeleach who promis'd to cure the diſeaſe in this manner; that is, he would open the ſkin a little above the tumour, and having laid bare a vein of a conſiderable ſize, which is there, he would tie it up ſtrongly with two ligatures, and would cut it aſunder betwixt theſe two.

This method was, at firſt, cried out againſt by every one, and eſpecially by thoſe to whom the circulation of the blood was known, as one which was ſo

(*n*) De recond. Abſceſſ. nat. l. 4. in fine Schol. ad c. 7.
(*o*) Opuſc. Pathol. Obſ. 32. Hiſt. 2.
(*p*) Eph. N. C. Cent. 3. Obſ. 19.
(*q*) N. 2.

far from being likely to be of utility, that it muſt even be greatly hurtful. However, as he mention'd that ſeven or eight horſes had been cur'd by him in this manner, and two of them in the ſame city; and as it appear'd, upon immediately making inquiry into the circumſtance, that what he ſaid was true; he was allow'd to perform the operation, which was done in the manner I have deſcrib'd, and in the preſence of the perſon who related the affair to me. The tumours then decreas'd continually, even on the firſt days after the operation, till at length, within about twenty days, they quite vaniſh'd away.

And as I happen'd to be making the ſame relation to ſome others, among whom was that very ingenious man Dominic Gulielmini, he choſe rather to ſuppoſe it probable that ſome nerve was tied up together with the vein, which nerve went to the diſeas'd part; and that this nerve, therefore, being cut aſunder together with the vein, the pain was by that means taken away; as it might be ſuppos'd not to have its origin from the tumour, but rather to have given riſe thereto: wherefore the force of the ſtimulus, which, as it had produc'd, might in the ſame manner continue the tumour, being taken away, the tumour was without difficulty carried off. Be this as it will, I was determin'd not to conceal this cure from you; for it never has done any harm to phyſicians to know what ſucceeds with farriers; and perhaps many things have been tried and done by theſe men, as it is allowable to make experiments upon brute animals, before they were transferr'd to men.

You ſee, for inſtance, that Petrus Creſcentius, who, when he wrote upon agriculture, four hundred years ago, interſpers'd ſome things relating to the chirurgical part of farriery, has taught us to take blood from a diſeas'd ox by inciſing the veins under the tongue (*r*); or how to receive what was to be given by way of clyſter in a kind of bag, the orifice of which is furniſh'd with a tube, and to inject it into the belly of a horſe (*s*); or in what manner, if blood happen to burſt forth from any vein in cutting out a tumid gland from a horſe, this is to be immediately ſtopp'd (*t*), by laying hold of the vein, and tying it up tight with a ſilk thread. Do you ſuppoſe that he did not take thoſe things from more ancient authors? and theſe from authors ſtill more ancient? ſo that before Celſus (*u*) and Galen (*x*) taught how to reſtrain the flux of blood, in parts that are wounded, by throwing a ligature round the wounded artery or vein, this method had, perhaps, been made uſe of by them while they were extirpating ſome gland, or while they were endeavouring to cure horſes that were wounded in battle.

But whether this method of ſtopping the blood has been transferr'd from other animals to man, or was firſt tried on him; I cannot help wondering that, as it has been deſcrib'd in different places, in the books of ſurgeons, from the times of Galen; and Benivenius had made uſe of it, among others, in that cure of the amputated penis which was referr'd to above (*y*), "by "laying hold of each of its veins which pour'd out blood," that is to ſay, the arteries, "and by tying them ſo as to bring on a coalition of their pre-

(*r*) L. 9. c. 65.
(*s*) Ibid. c. 18.
(*t*) Ibid. c. 16.
(*u*) De Medic. l. 5. c. 26. S. 21.
(*x*) Meth. Med. l. 4. c. 3.
(*y*) N. 50.

" cluded orifices;" I ſay, I cannot help wondering that there was nobody before Parey (*z*), who thought of transferring this to thoſe wounds which are made in the amputations of the limbs.

But leſt you ſhould happen to believe, that they were afraid of the thickneſs of the arteries that are the principal in the limbs, which bears no compariſon with the ſlenderneſs of the branches that Galen order'd to be tied; at leaſt, that is the principal trunk in the arm which unſkilful men often wound when they think they open only a vein, from whence afterwards, unleſs great diligence be made uſe of to reſiſt the beginning, an aneuriſm ariſes. And yet that this principal trunk was itſelf alſo wont to be tied up with ligatures, in the chirurgical cure of this aneuriſm, they could not be ignorant, not only from the writings of Aetius (*a*), Paulus (*b*), and Albucaſis (*c*), but even from thoſe of much later authors, as Guido de Cauliaco (*d*), and others.

However, I am reminded by the mention of an aneuriſm in the arm, which was merely accidental, rather to ſubjoin an obſervation of an aneuriſm which was form'd in the ham; not only that I may not recede too far from tumours of the lower limbs, on which I had determin'd chiefly to inſiſt; but alſo on account of thoſe things which have been ſaid above (*e*) of aneuriſms in the ham; a very clear example whereof, deſcrib'd by Hornius (*f*), I have in vain enquir'd after in the Sepulchretum.

55. A builder, or maſon, had a very ſmall tumour begin to appear and pulſate in his ham. And this, being neglected, grew to the bigneſs of an apple. Then many things being preſcrib'd by the phyſicians and ſurgeons, they were partly of no uſe, and partly ſeem'd rather to be injurious, and particularly compreſſion. Wherefore, it had ſo increas'd within a very few months, as to equal a ſmall melon; and gave the patient the moſt excruciating pains. To theſe was added an œdematous tumour of the whole leg and foot, and a tumour of the knee itſelf in particular. Finally, a gangrene, and ſoon after a ſphacelus, came on. And a rupture being the conſequence of this, as had been predicted, a great profuſion of blood was brought on, whereby life was immediately taken away; and this happen'd about the end of March, in the year 1740, at which time I was demonſtrating ſome things relative to the anatomy of the brain, to the pupils in the hoſpital.

In diſſecting the brain of this man, at that time, likewiſe, beſides other circumſtances which do not relate to the preſent ſubject, I obſerv'd that, notwithſtanding he had ſeem'd to die from a great loſs of blood, bloody points, nevertheleſs, appear'd in the ſections of the medullary ſubſtance, which even became much larger when I compreſs'd them laterally: and I alſo obſerv'd what ſeem'd to deſerve our attention and admiration; I mean, that when I cut the corpora ſtriata into ſmall pieces, as I generally do, although the ſcalpel was directed to whatever part I pleas'd, and inclin'd in every direction during the diviſion of the whole of theſe bodies, I no-where, however, ſaw any medul-

(*z*) L. 11. c. 24.
(*a*) Tetrab. 4 Serm. 4. c. 40.
(*b*) De Re Med. l. 6. c. 37.
(*c*) Chirurg. P. 2. c. 49.
(*d*) Chirurg. Tr. 2. D. 2. c. 4.
(*e*) N. 10.
(*f*) Epiſt. de Aneuryſm. ad Donzell.

lary

lary ſtriæ, as I have done always at other times; but that, in place of them, a kind of continu'd medullary band, as it were, ſhow'd itſelf, which was intercepted on each ſide, according to the longitudinal direction of thoſe bodies, by the cortical ſubſtance: and yet it did not appear that the man had ſuffer'd any thing unuſual in regard to the uſe of his brain or nerves: and this I would have thoſe gentlemen conſider, who are pleas'd with certain offices of theſe ſtriated bodies which were formerly aſſign'd to them.

But let us at preſent omit theſe things, and go on to the diſſection of the ham, which was perform'd by our Mediavia. It is true, a ſphacelus had affected all theſe parts; and yet not in ſuch a manner, but that all the circumſtances which I ſhall mention appear'd very clear. The crural artery began to be dilated immediately upon its paſſing from the internal ſide of the thigh to the poſterior part. Then, for the extent of ſome inches, you might have look'd for the trunk of the artery in vain; but the branches, into which it divides itſelf, at length appear'd in the calf of the leg. Yet in the whole of this tract was there nothing but a very large cavity fill'd with ill-condition'd blood; all the parts being eroded, and even the nerve and vein which are aſſociated with the artery, betwixt the lower proceſſes of the os femoris that are prominent on the back part, being ſo far conſum'd, that ſcarcely any thing remain'd beſide the coats of the vein which adher'd to the bones. But the bones themſelves were alſo in part eroded; that is to ſay, the poſterior ſurface of thoſe proceſſes I have mention'd, and the upper part of the fibulæ.

56. But now let us go on from the tumour of the veſſels to the tumour of the bones, that is, to the exoſtoſis; and without being, in this letter, at all ſolicitous with Schelhammer (*g*), whether the exoſtoſis, the ſarcoma, the polypus, and other diſorders of this kind, are with juſtice claſs'd among tumours; nor yet with Bidloo (*h*), whether in a man who is not "healthy in "the other parts of his body," a tumour of the bone may not be call'd an exoſtoſis; eſpecially as Gorræus (*i*), who is very accurate in determining the proper ſignifications of medical words, expreſsly ſays that a polypus "is a "tumour," and that exoſtoſes "are tumours frequent even to thoſe who "labour under the lues venerea."

However, although I ſhall not controvert the point with any one, and ſhould chuſe rather to comprehend under the name of exoſtoſis, as if under a certain claſs or ſpecies, any tumours of the bones which are preternatural; yet I cannot approve of thoſe who, in enumerating the examples of exoſtoſes, produce, among theſe, ſuch as it is not certain do belong to the tumours of the bones; or, if this be certain, do not diſtinguiſh the exoſtoſes into different ſpecies, as it were, with the addition or junction of a peculiar name.

It is not certain and clear, that the monſtrous arm, deſcrib'd in the ſixty-ninth obſervation of the fourth century of Hildanus, does belong to the claſs of bony tumours; ſo that he himſelf (*k*) rather thought it ought to be

(*g*) De hum. corp. Tumor. S. 1. n. 3.
(*h*) Dec. 2. Exercit. Anat. Chir. 9.
(*i*) Defin. Medic. in πολύποδες, & in Ἔξόστωσις.
(*k*) Hiſt. ibid. cit. § 4.

reckon'd

reckon'd among thoſe tumours which I have taken notice of above (*l*), with Henſelerus. Yet although Tulpius (*m*) had quoted, in the latter part of one of his obſervations, that which I have ſaid is extant in Hildanus, and had therein deſcrib'd the os humeri as being in a very bad ſtate, without ſaying, however, that it was found to be increas'd in bulk; Stalpart (*n*), in treating of exoſtoſes, not only takes notice of that example of Hildanus, but even affirms that Tulpius had there deſcrib'd "an os humeri" which "was "much encreas'd in its bulk:" and this circumſtance Tulpius ſeems to hint, as if he judg'd from the external appearances, in the beginning of a hiſtory, which is likewiſe related in the Sepulchretum (*o*), though not without ſome typographical error; but when he comes to the diſſection he by no means confirms it.

After theſe, you will ſee that both of the examples are, without any ſcruple, related among the number of exoſtoſes, by ſome authors, juſt as another from M. Aurelius Severinus (*p*) has alſo been, ſince Mery (*q*) quoted it, as ſimilar to the exoſtoſes of the fingers deſcrib'd by him. But M. Aurelius, though he has really deſcrib'd and delineated a hand which was not unlike theſe of Mery externally, has, however, expreſsly ſaid, "that the matter "which was found under the diſeas'd part, when cut into," was not bony at leaſt; but "that it appear'd like the ſubſtance of the bulbous root of ſow-"bread boil'd; and that it was friable moreover, and yielded to the ſlighteſt "touch:" ſo that we could pardon, with a better grace, him who recounted among exoſtoſes, a hand which, to external appearance, was not very much unlike one, and which was examin'd by Ruyſch (*r*), in the beginning of this century; for although it was not poſſible to ſee through the part, and diſtinguiſh whether the tuberoſities, into which it had grown out, took their origin from the bone itſelf, yet he found that one of them was compounded of innumerable leſſer tumours, as it were, "partly cartilagi-"nous, and partly oſſeous."

57. But it is not even ſufficient to comprehend under one name of exoſtoſis, except in a general way, thoſe tumours which it is certain are real tumours of ſome bone, as they greatly differ from each other. For there are ſome, in which there ſeems to be nothing contrary to the general tenor of nature, beſides a ſwelling or excreſcence of the bone; ſuch as Mery (*s*) has ſaid that the common exoſtoſes are, and ſuch as Bidloo (*t*) has ſuppos'd to be the only ones that deſerve the name of exoſtoſis; requiring the bones to be perfectly ſound, not only above and below the tumour, but alſo that they ſhould be properly cover'd with the perioſteum, and not ſhow the leaſt traces of any inflammation internally or outwardly, nor yet of acrimony, putrefaction, or corruption, in the leaſt degree: and this opinion has had more than one follower; and among theſe the diſciple of the celebrated Kulmus, in that

(*l*) n. 53.
(*m*) Obſ. Med. l. 4. c. 13.
(*n*) in Schol. ad Obſ. Med. Anat. 94. Cent. 1.
(*o*) Sect. hac Obſ. 15. §. 3.
(*p*) De recond. Abſceſſ. nat. l. 4. c. 1.
(*q*) Mem. de l' Acad. R. des Sc. A. 1720.
(*r*) Epiſt. Anat. 14.
(*s*) Mem. de l' Acad. R. des Sc. A. 1706.
(*t*) Exercit. cit. ſupra ad n. 56.

diſſertation

diſſertation (*u*) which was publiſh'd in the year 1732, while he himſelf was preſident, entitled, *De Exoſtoſi Steatomatode Claviculæ.*

Yet many others, both before and after them, call'd tumours of the bones, wherewith a caries was likewiſe join'd, exoſtoſes. But in both kinds we meet with diviſions again. For the tumour of a bone which is not carious, is either made up of a denſe and ſolid ſubſtance, ſuch as Bidloo (*x*) has in the greateſt part repreſented, or of a ſubſtance "wholly" cellular, or ſpongy; as Ruyſch (*y*) ſaw in a thigh bone, which is naturally very hard, and which was encreas'd an inch in its thickneſs; or, finally, as the ſame author delineated (*z*) in the os tibiæ, of a ſubſtance externally very thick, hard, and compact; yet internally cavernous.

But tumours of a carious bone are either the conſequence of a caries, the cauſe of which was external injury, as in the lower jaw of a girl who had fall'n from a high place, and who is deſcrib'd in the Hiſtory of the Royal Academy of Sciences at Paris (*a*), or, as is more frequently the caſe, of an internal diſorder of the humours; whether this be from a lues venerea, as Stalpart (*b*) obſerv'd in the os tibiæ, and even as the figure ſhows in the os femoris; or from ſome other cauſe, as Bogdanus (*c*) found in the whole os tibiæ, referring the cauſe to that diſeaſe which the Arabians call'd the *Ventoſitas Spinæ*: and, indeed, that the bones do become tumid from this diſeaſe, is very well known; and not only in the limbs, but in other parts alſo; as Severinus has obſerv'd (*d*), and the celebrated Kaltſchmiedius (*e*) has lately confirm'd, by a ſingular example in the lower jaw.

Yet how much theſe tumours differ from each other, where we conſider either the various magnitude of the cells which they comprehend, or the various matters which are contain'd in theſe cells, may not only appear from other obſervations, but particularly from thoſe that we read in the Hiſtory of the Academy juſt now quoted (*f*), and in their Memoirs (*g*); as that of Farcy in the upper part of the thigh, that of Mery in the inferior proceſſes of the thigh-bone, and of the ſame author in the fingers.

However, even when the exoſtoſes contain nothing that is foreign to the nature of bones, and for that reaſon nothing which is apt to produce caries, pains, and ulcers; the protuberances themſelves, nevertheleſs, eſpecially thoſe that are large and ſituated in the joints, by greatly diſtending the tendons that lie thereon, are exceedingly injurious to the motions of the parts in which theſe tendons terminate: in the two obſervations, therefore, of Mery, which were laſt of all referr'd to, they could by no means be mov'd: but it is ſingular in that which Richius (*h*) ſent to Paris, that a ſenſible motion of flexion remain'd in the leg, when the lower part of the os femoris was greatly enlarg'd.

(*u*) §. 13. & 24.
(*x*) Exerc. cit. Tab. 2. Fig. 3.
(*y*) Theſ. Anat. Max. in fine ad litt. H.
(*z*) Theſ. Anat. 10. Tab. 2. Fig. 10.
(*a*) A. 1727. Obſ. Anat. 6.
(*b*) Cent. Poſter. P. 1. Obſ. 44. & Tab. 14. Fig. 1. & 2.
(*c*) Obſ. Anat. Chirurg. 12.
(*d*) De recond. Abſc. nat. l. 5. c. 16.
(*e*) Progr. de raro Spinæ Vent. caſu.
(*f*) A. 1737. Obſ. Anat. 1.
(*g*) A. 1706. & 1720.
(*h*) Hiſt. de l' Acad. R. des Sc. A. 1739. Obſ. Anat. 4.

But

But that which the very great anatomiſt Euſtachius (*i*) has given us in the hiſtory of a Roman matron, is much more ſurpriſing. In her caſe, the inferior proceſſes of the femur "were grown out into ſuch a tumour as to far "exceed the ſize even of the largeſt human head;" as diſſection, at length, in the dead body demonſtrated to the other phyſicians, who did not give credit to the nature of this tumour; yet the woman "mov'd very freely and "eaſily to all ſides;" which circumſtance being obſerv'd by Euſtachius, and this at the ſame time, that thoſe proceſſes, or heads, "although they were "become ſo tumid and turgid, retain'd their natural figure nevertheleſs," had brought him to attain to a true knowledge of the caſe while the woman was ſtill living.

Mery, therefore, in the caſe of that large exoſtoſis which I have juſt now taken notice of, as deſcrib'd by him in the ſame proceſſes, has, with great propriety, accounted for the impoſſibility of flexion in the leg, not only from the tendons being vehemently diſtended, but alſo from the figure of theſe proceſſes being ſo chang'd, that the lower ſurface of them was, from a convexity, become plane and flat, and even rather excavated.

58. From theſe you will collect other diſtinctions of exoſtoſes in their figure, and not only in their ſituation; which, both formerly and in our times, you find to have been obſerv'd even in the extremities of oblong bones, although it is ſaid to occur more frequently in the trunk of them, which they call the diaphyſis; and that cannot be denied. But this diſorder attacks other bones, alſo, beſides thoſe of the limbs: though it is not agreeable to our purpoſe here to take notice of all the examples of this kind. I have ſlightly touch'd upon ſome from the books that are now in my hands, from whence you will eaſily imagine how many might be added to this ſection of the Sepulchretum, in which not only recent examples, but even ſome ancient ones, are wanting.

If you enquire after others, you will find them in ſeveral places, but particularly in that diſſertation which I referr'd to above (*k*). The author of which, moreover, gives you a peculiar obſervation of an exoſtoſis of the clavicle; in which bone he confeſſes he does not remember whether it had been ſeen before by others, eſpecially of ſo conſiderable a ſize. I ſaw, four years after the publication of that diſſertation, an exoſtoſis protuberating from the left clavicle in like manner, (which had alſo formerly receiv'd a blow) and that in the form of a very large ſpheroid, in a young man, by deſcent an Italian, who had come hither from Vienna, to ſee if he could find any one here, who, after ſo many methods having been tried by various perſons, and all to no effect, would undertake to cure him.

This tumour might eaſily have impos'd upon me alſo, as it had done upon others, by reaſon of the teguments wherewith it was cover'd. But the bony hardneſs which lay beneath, and its very firm connection and continuation with the clavicle, caus'd that diſſertation to come into my mind; and I pronounc'd that no cure of it could be made without the application of a ſaw: which, to ſay nothing of the danger, neither the decay'd ſtrength of his ſlender

(*i*) De Multitudine, c. 8. (*k*) N. 57 Vid. ejus c. 2.

and delicate little body would bear, nor the deprav'd ſtate of his fluids, which was even original in him, would permit: all which ſuppoſitions I confirm'd by letters to the chevalier Nicolaus Garellius, deſervedly chief of the imperial archiaters, who had in particular advis'd the mother of the patient, from his peculiar partiality to me, that ſhe would ſuffer nothing to be done but by my advice; and, at the ſame time, referr'd him to the diſſertation I have quoted, which he had never yet ſeen.

Nothing, therefore, was done; he himſelf alſo, as he wrote back to me, approving my advice, and affirming that the tumour, when ſhown to him in the beginning, and before any congeſtion of ſtagnating humours was made, was really bony, and had its origin from the clavicle itſelf. Of what ſtructure, therefore, this exoſtoſis was, and what it contain'd, I did not ſee. But I did ſee in another, which was prominent from the thigh of a man. Yet before I ſpeak of this, I will anſwer a kind of tacit interrogation of yours. For you will deſire to know how it can happen, that the moſt rigid and hardeſt laminæ of bones may be ſo extended as to form exoſtoſes.

59. In the firſt place, then, call to mind thoſe things which have been quoted above (*l*) from a certain reſponſe of Valſalva, that there are ſome exoſtoſes, as they ſeem at firſt to be, which are, in fact, nothing elſe but ligaments and tendons, the thickneſs and hardneſs of which being increas'd by the ſtagnant matter, reſemble a tumour of the bone whereupon they lie. Exoſtoſes of this kind occur after a blow, a luxation, and other injuries of that kind, externally applied; and one, in particular, occurr'd in a noble abbot, a colleague of mine, who, after having his foot luxated, and replac'd, had ſo conſiderable a hardneſs in a certain place, on the upper and back-part of the foot, that the bone might have ſeem'd to moſt perſons to be prominent beyond its ſituation; yet, by the uſe of cerates containing gum ammoniacum, by time, and walking, it was at length entirely taken away.

Nor, probably, were thoſe exoſtoſes of a different kind which Severinus (*m*) ſays he himſelf had been troubl'd with at the lower part of each elbow, and which perpetually incommoded him when he lean'd upon them, till ſome years after they were diſcuſs'd without any remedy. Theſe, he ſays, "are "wont to be call'd *ſoproſſo*" by farriers, as if "acceſſions of bony matter "made upon the bones:" and it is ſurprizing that Stalpart (*n*), in copying this paſſage from a nameleſs author, after ſome other things, which follow ſoon after in the ſame Severinus, ſhould underſtand this Italian word *ſoproſſo* in ſo wrong a ſenſe, as to ſay that it ſignified "an ulceration of the bones."

But to come from falſe exoſtoſes to the true, and from ligaments and tendons to the perioſteum, which adheres very cloſely to the bones; Boerhaave (*o*) propoſes a double kind of exoſtoſis: the firſt, wherein the perioſteum alone is obſtructed, and after that ſwells by various degrees till it attains to the hardneſs of bone; the ſecond, where the lamellæ of the bones recede in ſuch a manner from their uſual contact, that he ſaw the bones of the cranium four times thicker than they naturally are, and altogether fungous, ſo as to reſemble a pumice-ſtone.

(*l*) N. 13. (*m*) De recond. Abſc. nat. l. 4. c. 9. § 4. (*n*) Schol. ad Obſ. cit. ſupra, n. 57. (*o*) Prælect. ad Inſtit. § 711.

The former of these modes, then, you may make use of in order to explain those exostoses which, being protuberant on the external surface of the bones, consist of a compact bony substance, as in those examples that I have quoted from Bidloo and Ruysch (*p*); but you will much more readily explain them in this manner, after you have read the explications of the celebrated Duhamel (*q*), which are not only not different, but even confirm'd by his own experiments, while he inspected exostoses of this kind excited by himself in living animals, in their various degrees of induration, and attended to it from whence they proceeded. And, indeed, although he confesses that he could never yet excite exostoses of another kind, that is, spongy exostoses; yet he hints at a mode wherein we may conceive that these, also, are made up of the periosteum; and in fine concludes, that whatever wounds, irritates, inflames, or makes the periosteum tumid; which kind of injuries, it is certain, have very often happen'd before the production of exostoses; may without doubt give origin thereto: and this opinion of that very experienc'd man will have somewhat more weight with you, when you read over the memoirs which he previously wrote, wherein he deduces the production and reparation of the bones from the periosteum.

Yet as there are not wanting some who oppose contradictory experiments, and as he himself, like a prudent and cautious observer, denies that he contends for the opinion of all exostoses proceeding from some disorder of the periosteum; if you suppose those are to be excepted, in which, according to the second mode mention'd by Boerhaave, the laminæ of the bone itself have receded from each other; you will not easily understand by what means they could, when they are very hard and very rigid, be mov'd and forc'd outwardly, be curv'd, expanded, and increase; unless you suppose them to be again made soft, and to have return'd to the former nature of a cartilage, as it were.

Many examples of this change are, certainly, extant in the books of physicians, some of which you will see pointed out by the very learned Haller (*r*); and not to go far from the observations taken notice of above, Tulpius, also (*s*), saw bones "so tender, flaccid, and soft, that they could be cut very "easily with a knife, like wax;" and Richius (*t*) found them so soften'd, that he took the exostosis for a certain species of the *spina ventosa scorbutica*. To these add those that have been found, more than once, by the celebrated Heister (*u*), and not in children only, but in men also, so soft as to be very easily cut with the knife, when they were affected with a *spina ventosa*: wherefore, as he supposes that from deprav'd humours of the venereal, scorbutic, variolous, and even ricketty kind (for it is certain that ricketty children are also subject to tumours at the extremities of the bones) effus'd by the eroded sanguiferous vessels into the cavities and cells of the bones, and vitiating the medullary oil; as he supposes, I say, that the bony lamellæ are

(*p*) Supra, n. 57.
(*q*) Mem. de l'Acad. R. des Sc. A. 1743. Mem. 6. sur les Os, Obs. 31. & seqq.
(*r*) Not. *b* ad Prælect. Boerh. in Instit. § 401.
(*s*) C. cit. supra ad n. 56.
(*t*) Cit. supra ad n. 57.
(*u*) Instit. Chir. P. 1. l. 5. c. 9. not. *a* ad n. 5. & Diss. de Oss. Tumor. n. 28. & seqq.

ſoften'd by humours of this kind, ſo he thinks that, when ſoften'd, they are by degrees urg'd outwards, from the congeſtion and preſſure of theſe fluids, and expanded in their compaſs.

And I ſcarcely doubt but you will follow this, or ſome other ſimilar explication, in thoſe tumours, in particular, which are as yet comprehended by ſoft bony lamellæ; though you might rather heſitate in regard to thoſe in which, though theſe lamellæ were perceiv'd to be every-where rigid and hard, the bulk, nevertheleſs, ſtill continu'd to be increas'd, and even gain'd a very great increaſe in the latter years of its exiſtence; ſuppoſe, for inſtance, an increaſe equal to that of the fingers ſpoken of by Mery (*x*), and of the clavicle in that diſſertation quoted above (*y*): although in theſe two examples ſome room is left for the explication; in the latter, by reaſon of the cartilaginous parts being here and there interpos'd to the bony in the circumference of the tumour; and in the firſt, by reaſon of the ſame circumference being interrupted with carious ulcers in many parts.

But ſo far on this ſubject; for we have even ſaid more than is neceſſary to ſhow you of what kind, and from what cauſe, this exoſtoſis was which was ſeen by me in that perſon of whom I ſhall immediately ſpeak, and examin'd by diſſection after the death of the patient.

60. The body of a man, of thirty years of age, of whom we could learn nothing more than that he was taken off by an apoplexy, was brought into the college, when I was teaching anatomy there, in the month of January, in the year 1732, and his limbs made uſe of for the public demonſtrations; by which I had an opportunity of examining a protuberance on the left os femoris, of the form of a ſpheroid, and of the bigneſs of a middle-ſiz'd apple. This tumour was prominent at a little diſtance above the inferior heads, or proceſſes, of that bone, and on the poſterior ſurface.

The bone being cut with the ſaw in a longitudinal direction, on examination I found it to conſiſt of bony cells, which abounded with a medullary oil, of a liquid conſiſtence, and of a yellow colour; the cavity of the bone, which correſponded to that protuberance, being fill'd with a very large quantity of the ſame kind of oil. And the yellowneſs and liquid ſtate of this oil, in both places, became worthy of remark, on account of the marrow in the farther cavity of the bone being ſomewhat red and concreted; and the occaſion of this obſervation was encreas'd by the great coldneſs of the ſeaſon, with which, though other fluids were frozen to ice, a part of that oil, nevertheleſs, had not in the leaſt become concreted.

61. Whether that change of the medullary oil in an exoſtoſis, and about an exoſtoſis, was the conſequence of this tumour, or preceded it, I leave to you to determine. For I think I have ſaid more than enough of bony tumours, at leaſt as far as relates to the preſent purpoſe, and I perceive that this letter is already grown out beyond the bounds of my firſt intentions. And yet I have not touch'd upon all the tumours, even of thoſe which happen chiefly in the lower limbs, tho' I, laſt of all, inſiſted principally on thoſe; and of this kind, among others, are varices, œdemas, and clavi or corns of the feet.

(*x*) Cit. ſupra. n. 56. (*y*) Cit. ſupra, n. 57.

But

But in regard to varices, I had ſcarcely any thing that was worthy of remark, unleſs I ſhould perhaps have choſen to refer you to Bidloo (*z*), to be inform'd of the immenſe ſize of ſome varices; in order to underſtand which, when already form'd, it is neceſſary to ſuppoſe a laxity of the coats of the veins, or a loſs of tone, in conſequence of too violent exerciſes, too long-continu'd exertions in ſtanding, or carrying heavy burdens; and conſtrictions or compreſſions that prevent the free motion of the blood, with other things of a ſimilar kind.

And who can allow that a laxity of the valves has no effect, in compleating that dilatation which is begun to be form'd? I ſhould even ſuppoſe, that to the commonly-known office of the valves, which relates very much to the preſent caſe, another might be added, as having the ſame relation; I mean, that like bands or ligaments they may ſtrengthen the vein, as far as it is poſſible, by paſſing from one paries to the other; ſo as to make it leſs to be wonder'd at that the dilatation is increas'd, when they are relax'd or lacerated.

And as to œdematous tumours, I have ſpoken of them ſufficiently when writing of the chronic and hydropical affections of the viſcera: and indeed it is from the previous hiſtories of theſe affections, that almoſt all the examples of œdemas are taken in the Sepulchretum, in order to be repeated here.

Nor ſhould I have any thing to add in regard to clavi, if you had not lately aſk'd me my opinion of that incurable clavus, from the irkſomeneſs of which it is ſaid, by the younger Pliny (*a*), that Silius Italicus, a conſular man, and at the ſame time no contemptible poet, would have put an end to his own life by hunger. "The cauſe of death," ſays he, "was his ill "health. He was affected with an incurable *clavus*."

If he had ſaid more than theſe words, you would not, I ſuppoſe, have then aſk'd me what this clavus was, or where it was. You therefore would have me divine. For you cannot be ignorant, when you read Celſus (*b*) and Aetius (*c*), that clavi may ariſe not only in the feet, but in the eyes alſo, not to mention other places; and of thoſe which have their origin in the eyes, that the diſorder call'd clavus by Aetius, is different from that to which Celſus gives the ſame name; for the former means the tunica uvea prolaps'd, in a conſiderable part of it, on the outſide of the eye, and already become hard, in the ſame manner as Paulus (*d*) and Actuarius (*e*) underſtand the terms; but Celſus means callous tubercles in the white of the eye: and he ſays alſo that clavi, which exiſt elſewhere, ariſe not only from contuſions, but ſometimes from other cauſes alſo.

Yet as you know that all theſe tumours, whether form'd in the feet or in the eyes, or in any other part, have been call'd clavi from the ſimilarity of their figure; you plainly ſee how many caſes, that are various in their nature, ſituation, and cauſes, are comprehended under this term alone, and how eaſily clavi may be incurable; and not only in proportion to theſe varieties,

(*z*) Dec. 1. Exercit. Anat. Chir. 6.
(*a*) l. 3. Epiſt. 7.
(*b*) De Medic. l. 5. c. 28. S. 14. & l. 7. c. 7. S. 12.
(*c*) Medic. Tetrabibl. 2. S. 3. c. 34.
(*d*) De Re Med. l. 3. c. 22. ubi de prolapſ. ocul.
(*e*) Medic. l. 2. c. 27.

but

but alſo in proportion to the ſeverity in the method of curing them (*f*), be ſometimes the occaſion of great irkſomeneſs and pain, not to ſay always; particularly in a man ſuch as Silius Italicus, who, as the ſame author Pliny (*g*) has told us, "had paſs'd through his ſeventy-fifth year, and was of a deli-"cate habit of body."

But though this is the ſtate of the queſtion, as there is nevertheleſs ſo great a latitude in underſtanding the caſe, and conſequently a great difficulty in aſcertaining the truth, I do not think that it is in my power greatly to reſiſt the opinion of any one, who may think differently from me; yet perhaps this will not prevent you from thinking that I come pretty near to probability, if I ſay that no other clavus was here meant by Pliny, than a clavus of the feet. For thoſe that are form'd in the eyes are more rare; and the others "ſometimes indeed have their origin in other parts, but chiefly in "the feet," as Celſus (*h*), and thoſe Grecians (*i*), and even the fact itſelf, confirm; ſo that he who ſpeaks of a clavus, without making mention of its particular ſituation, and particularly if he is not a phyſician, ſeems to ſignify a clavus of the feet, rather than of any other part: although, indeed, one who is not a phyſician would certainly ſcarcely omit that particular mention, or ſome other adjunct, if he meant, by the term clavus, to point out any other diſorder, but that of which this word moſt generally conveys the idea; of which rare kind, clavi of the eyes, or a certain ſpecies of furunculi, are; yet you read in Ingraſſias (*k*), "that ſome us'd to call this ſpecies cla-"vus or ſpina;" and certain clavi of the feet themſelves, when explain'd in the manner they are by the author of the *Finitiones Medicæ* (*l*), which are aſcrib'd to Galen, are rare alſo; for in this work we read that, "a clavus is "an orbicular ulcer in the ſole of the foot, which has contracted a callus."

And if this definition had come into the mind of that learned phyſician Lochner (*m*), when he deſcrib'd a ſpecies of a very malignant kind of clavus, as having been ſeen by him, not without death being the conſequence; he would, in my opinion, more readily have made mention of it, than of the diſeaſe call'd by the ancients *gemurſa*, inaſmuch as it is a diſeaſe which, if it were in fact any ſpecies of the clavus, has not its ſeat, however, in the ſole of the foot, but, as Feſtus ſays (*n*), "ariſes under the little toe, and even betwixt the toes," as the elder Pliny had ſaid, who is likewiſe quoted by Lochner, in the twenty-ſixth book indeed, but in the firſt chapter, when ſpeaking of the *gemurſa*, as of a diſorder which was "ſoon put a ſtop to in "Italy," and that long ago, ſo as for "even the name of it to be oblite-"rated."

All which things I was willing to take notice of for example's ſake; not that I believe there to have been ſo many ſignifications of the word clavus among phyſicians, and ſtill leſs among others, in the age of the younger Pliny; though there certainly was, among all, that ſenſe in which I, for this reaſon,

(*f*) Vid. exempla plura apud mox citandum Lochnerum, & in Epiſtola indicanda.
(*g*) Epiſt. cit.
(*h*) Sect. 14. cit.
(*i*) Aet. Tetrab. 4. Serm. 2. c. 82. & Paul. l. 3. cit. c. 80.
(*k*) De Tumor. p. n. ubi de Furuncul.
(*l*) jam propius finem.
(*m*) Eph. N. C. Cent. 1. & 2. Obſ. 192.
(*n*) De Verbor. Signific. l. 7.

ſuppoſe

ſuppoſe him to have made uſe of it alſo. And from hence, and from the word *natus*, which he has made uſe of, not ſo proper to all diſeaſes as to the diſeaſes of this kind, you will, at the ſame time, underſtand, why I did not fall into the opinion, as I am wont to do at other times, of another very learned phyſician, who in a particular letter, publiſh'd ſome years ago, upon the clavus of Silius, ſuppoſes it to have been that pain of the head; which, however, he, in conſequence of his very commendable ingenuouſneſs, confeſſes he could never find to have been call'd by the name of clavus, before Valeſcus de Taranta, that is, before the fourteenth century. Farewel.

LETTER the FIFTY-FIRST

Treats of Wounds and Blows of the Head.

1. THERE are, in the papers of Valſalva, ſo many obſervations which relate to wounds and blows, that, if I meant to comprize all of them in one letter, I ſhould ſeem to ſend you a book inſtead of a letter. Being, therefore, under a neceſſity of dividing them according to their various ſituations, I now ſend you thoſe that relate to the head, and ſhall ſend the others hereafter. And beginning with thoſe wherein the cranium was either not at all hurt, or only ſlightly, I ſhall go on to thoſe wherein it was found to be either quite fiſſur'd, or fractur'd.

2. A young man, of ſixteen years of age, was ſtruck with a ſtone which was thrown, in the left part of the ſinciput, near to the lambdoidal ſuture, at the diſtance of about two inches from the ſagittal. No ſymptom that was worthy of remark was the conſequence; except the lips of the wound beginning to ſwell, and that ſome days only before the eleventh day. On which day a fever diſcover'd itſelf, with a coldneſs and a vomiting, but without any pain of the head. After this follow'd convulſive motions, ſpeechleſsneſs, deafneſs, and blindneſs; and, finally, in the beginning of the fourteenth day, death itſelf.

The cranium was unhurt, and yet the dura mater, in that part which lay under the wound, for almoſt as large a ſpace as the wound was continu'd, was found to be thicken'd, and very lax, of an unequal ſurface, and of a colour verging to a yellowiſh hue; and betwixt this membrane and the pia mater, a concocted pus was found to ſtagnate betwixt the falciform proceſs, and the upper part of the cerebrum which lay near thereto, quite to the anterior parts. In the whole of the cerebrum itſelf, however, was found no injury which fell under the notice of the ſenſes.

3. A man

3. A man, who was near ſixty years of age, receiv'd a blow with a ſtick, a little above the extreme part of the forehead, and the left temple; no morbid ſymptom appearing then, or in the following days; ſo that he came by himſelf every day to the hoſpital of St. Mary de Morte, at Bologna; where the uſual remedies were applied to his wound, which was ſuppos'd to be no more than cutaneous, and of no importance.

And, indeed, during four or five of theſe days, he continu'd in the market ſelling cheſnuts, according to his uſual cuſtom, in a very cold ſeaſon. But about the ſixth day his wound became worſe, and a fever, attended with a coldneſs and rigor, came on: and this returning every day in the ſame manner, without any other ſymptom being added, than a ſlight gangrene of the wounded part, the man was gradually carried off thereby.

The carcaſe was contracted, as it ſeem'd, from the coldneſs of the ſeaſon. A little ſanies had deſcended from the wound betwixt the extreme margin of the temporal muſcle and the bone. And the gangrene, by its eroſion, had dilated the wound to the ſize of that piece of money which is called a Roman crown: and there the naked bone came into ſight.

On cutting out the upper part of the cranium, no ſign of injury could be obſerv'd in that bone, even upon the moſt ſtrict examination, Yet the meninges were found to be ſanious, and ſomewhat thicken'd, in the whole of that ſpace wherein the bone had been laid bare. The cerebrum, which lay beneath theſe thicken'd parts of the meninges, had contracted a very evident, though a very ſlight injury. For externally, the ſubſtance thereof was corrupted to the ſize of a ſmall vetch; and in the middle it ſeem'd to be perforated with a very ſmall foramen. But this foramen, together with the corruption, did not deſcend lower than to a very ſmall depth.

4. Before I here add other hiſtories of the ſame kind, you will certainly make ſome enquiries; and this in the firſt place, how it could be that, though the bone was unhurt, the meninges which lie beneath were nevertheleſs both purulent and ſanious; and how the brain itſelf was found to be not without ſome injury in this man? Berengarius, indeed, as you have it even in that ſecond ſection of the Sepulchretum (*a*), ſuſpected it might happen that the ſanies ſhould paſs through the pores of the cranium, from the external wound, eſpecially if it had not a free exit from the wound: and that this may happen in ſome certain places is not to be denied; as, for inſtance, where the ſanguiferous veſſels are pierc'd through, or where the ſutures are very lax. Yet, for the moſt part, it is better to ſuppoſe, with him, what I ſhall ſpeak in the words of Celſus (*b*), "that although the bone remain'd entire, ſome "vein, being ruptur'd internally, in the membrane of the cerebrum, from "the blow, diſcharges a little blood:" and that this vein is ruptur'd from a violent concuſſion of the cranium.

In the ſame manner you will explain many obſervations, ſimilar to thoſe I have produc'd; as, in particular, that of Mauchartus (*c*), wherein, till ſo far as the tenth day, there appear'd no bad ſign; and yet how much miſchief was conceal'd under the cranium, which was every where unhurt, the

(*a*) l. 4. in Schol. ad Obſ. 1.
(*b*) De Medic. l. 8. c. 4.
(*c*) Eph. N. C. Cent. 9. Obſ. 40.

diſſection

diſſection of the patient, who died ſuddenly before the fourteenth day, ſufficiently ſhow'd. And by what means it may happen that, in a concuſſion of the ſkull, the veſſels within its cavity ſhall be ruptur'd, has been ſhown at large by Peter Simon Rohault (*d*). But if the concuſſion ſhould have been very ſmall, and within the cranium, which is not at all injur'd, the internal parts be found to have been hurt; ſee in what manner Bohn (*e*) conjectur'd that this might happen in his obſervation, and that of others; from whoſe writings (*f*) you will pick out ſeveral that you may add to this ſection of the Sepulchretum.

But to return to thoſe obſervations which I have given you from Valſalva; you will aſk me, in the next place, why the blood, which was extravaſated within the ſkull, did not begin to give tokens of its effuſion immediately, inſtead of beginning ſo many days after? Without doubt, becauſe very ſmall drops, diſtilling from a ſmall veſſel ſlowly and by degrees, could not arrive to ſuch a quantity as to be injurious till after ſome days had paſs'd, and at the ſame time could not arrive to ſuch a ſtate of corruption as to vitiate the meninges and brain.

Yet both of theſe circumſtances were brought about the ſooner in him who, continually expoſing himſelf to the very cold air, gave occaſion, by the contraction of the external veſſels, for a greater quantity of blood being carried through the internal parts; and that in a leſs ſalubrious ſtate, by reaſon of inſenſible perſpiration being retain'd. The contrary external cauſe may alſo produce the ſame effects, by exciting and heating the blood; as in the ſon of Theodorus (who died of a wound in the head, which was to appearance ſlight) Valleſius (*g*) conjectur'd, and with very good reaſon, ſince, after having been expos'd to the ſun "on the ninth day, the firſt fever came upon him "on the tenth."

But if you aſk me why, of the two firſt whoſe hiſtories I have written, he whom the fever ſeiz'd the ſooneſt was carried off by no diſorder beſides this; but he who was ſeiz'd with a fever later, was carried off by ſo many other very violent diſorders in conjunction with it; many reaſons may be given for this difference: firſt, the delay itſelf, whereby both the quantity and the depravity of the extravaſated matter, although latent in the concocted pus, was, without doubt, increas'd: in the ſecond place, the different diſpoſition of the humours and parts in different bodies and different ages: and, finally, the different kind of violence applied by the throwing of a ſtone, and by the blow of a ſtick.

Thus, in the fifth book of the Epidemics (*h*), you ſee that "he who was "ſtruck on the head with a ſtone by the Macedonian, was entirely depriv'd "of his ſpeech, heard nothing at all, and was agitated," that is, "in a con-"vulſive manner," as the ſame Valleſius (*i*) rightly interprets it; which are almoſt the ſame ſymptoms that were ſuffer'd by our young man, though later, that is to ſay, on the eleventh day, and not, like the other, on the third:

(*d*) Traité des Playes de tête ch. 4. & 10.
(*e*) Diſſert. de Trepanat. difficult.
(*f*) Etiam de Renunc. Vulner.
(*g*) Comm. in l. 7. Epid. ad 29. & in l. 5. ad 97.
(*h*) N. 24. apud Marinell.
(*i*) Comm. ad eam hiſtoriam, quæ ipſi eſt n. 56.

neither did this young man, like him, fall down from the blow, nor had he his ſkull fiſſur'd, and that "above the right temple;" as the ſame hiſtory, which is repeated ſomewhat more at large in the ſeventh book, teaches (*k*); though Valleſius, who had remark'd ſo many other things, does not obſerve this, and enquires, therefore, "in what part of the head this man had re-"ceiv'd the blow." And from this hiſtory you will perceive, that the various force of the ſtriking body, and the part of the head beſides which is ſtricken, ought to be attended to in the diſtinctions of wounds of this kind. But now let us add other obſervations.

5. A young man, of about thirty years of age, had two wounds inflicted by cutting inſtruments; the one on the left part of his forehead, the other oppoſite thereto, as it were, in the occiput. He had a vain irritation to vomit. He died about the twenty-fifth day.

In diſſecting the head, nothing was found, either internally or externally, that was worthy of remark, as far as related to the wound of the occiput. But that of the forehead firſt ſhow'd a ſanies about it, betwixt the ſkin and the cranium, which in that part had eroded the pericranium and the internal ſurface of the ſkin itſelf, like a *herpes exedens*, and had in ſome meaſure ſeparated the anterior, and at the ſame time ſuperior, part of the temporal muſcle. But internally, although the os frontis ſhow'd no more marks of injury than the os occipitis did, yet betwixt the bone and the dura mater there was a ſanies to the quanty of two drachms, which had eroded that membrane. And, indeed, on the right ſide, under the upper part of the cranium, in the interſtices of the blood-veſſels of the ſame membrane, was found a matter ſimilar to ſanies, but thicker. The other parts within the cranium were in a natural ſtate.

6. An old man, of ſixty years of age, who was very ſubject to epilepſies, being ſeiz'd with a paroxyſm, and falling upon the ground, receiv'd a blow upon the left part of the thorax, and, at the ſame time, on the left ſide of the head, above the temporal muſcle. That part of the thorax was in much pain: his reſpiration was difficult, and, in the beginning, blood was thrown out at the mouth by the ſtrainings to vomit. His head was weak, dull, and heavy; ſo that when aſk'd a queſtion, he ſcarcely gave any anſwer.

His thorax being open'd after death, the left cavity of it was ſound; but in the right cavity was found ſerum, to about the quantity of a pint; and the lungs on this ſide adher'd to the pleura in their upper part, and were univerſally indurated, as they generally are in a peripneumony. The ventricles of the heart contain'd polypous concretions; that in the right being very large.

In the head, the left temporal muſcle was a little bruis'd: and when the head was open'd, a portion of coagulated blood was found betwixt the left os petroſum and the dura mater; which bone adher'd ſo cloſely to the dura mater, that it could not be ſeparated but by force. However, the pia mater ſhow'd a little gelatinous concretion of ſerum at the ſides of the veſſels; and the ventricles contain'd a little extravaſated ſerum: the remaining part of the cerebrum was ſound.

(*k*) N. 18.

7. A man,

7. A man, of forty years of age, falling from a high place, bruis'd his left eye: and the ſkin above the eye-brow was, probably, torn by a ſharp ſtone. In the beginning he was ſeiz'd with a fever; which remitted a little afterwards. But about the twelfth day, after the commiſſion of an error in the preſcrib'd method of living, a more violent fever came on; to which, about the fourteenth day, a convulſion of the whole left ſide of the face was added, together with a cruel pain in the very ball of the eye. And at length the patient died about the twentieth day.

When the head was examin'd, theſe appearances were found. Under the ſkin that was lacerated above the eye-brow, was that nerve which, coming forth from the orbit, is reflected upwards on the forehead; ſo that being either contus'd, or in any other manner injur'd, it might eaſily excite convulſion. And the ball of the eye being ſomewhat putrid on the external part, had brought on a ſlight eroſion in the bone which is interpos'd betwixt the orbit and the brain, yet not to ſuch a degree as to affect the brain, which was ſound in this place. Towards the left part of the occiput, however, a ſmall portion of the brain inclin'd from its native colour to that of a browniſh colour. And the dura mater, which correſponded with this portion, was ſomewhat moiſt externally with a ſanies.

8. Although, in falling from high places, it frequently happens, that beſides the part which is manifeſtly contus'd, ſome other is alſo contus'd leſs-evidently, and it is, for this reaſon, leſs ſurprizing, that upon daſhing the os frontis againſt a hard body, ſome injury and a ſanies ſhould be found internally at the occiput; yet in the young man alſo (*l*), who was wounded on the left ſide, as a matter ſimilar to ſanies was found on the right ſide; and as, in the old man (*m*), not that part of the thorax which was ſtruck againſt the ground, but the oppoſite, ſhow'd an internal diſorder; I ſhall add ſomething upon theſe ſubjects below (*n*), as I alſo ſhall of convulſions, in conſequence of injuries of the nerve which is reflected under the eye-brow.

Yet I do not attribute the convulſions and death of this man to that nerve only, but alſo to the ſanies, wherewith the dura mater was moiſt; as I do the diſeaſe and death of the old man, partly to the peripneumonic ſtate of the lungs, and partly to the blood which was coagulated betwixt the baſis of the cranium and that membrane, and which adher'd thereto, no leſs than it adher'd in that man who, being kill'd within the ſpace of four days, by a fall from a conſiderable height, is ſpoken of in the commentaries of the Imperial Academy of Sciences at Peterſburg (*o*).

However, the marks of injury which were found within the cranium in theſe three obſervations, without the cranium itſelf being injur'd, may be explain'd, you perceive, in the ſame manner, that the former two, which you have read before them, were explain'd (*p*). Nor will you ſuppoſe, I believe, that the five which I ſhall immediately ſubjoin, ought to be differently explain'd; the cranium in them, indeed, being injur'd externally, but internally quite ſound.

9. An old man, about ſeventy years of age, falling from a conſiderable

(*l*) n. 5. (*m*) n. 6. (*o*) Tom. 7.
(*n*) n. 41. & n. 16. (*p*) n. 4.

height upon the ground, receiv'd a blow on the poſterior and right ſide of the ſinciput. After his fall he lay half-ſtupid: and although his ſtupor was diſcuſs'd ſoon after, and he walk'd by himſelf into the hoſpital, he nevertheleſs denied that he knew any thing of his fall, or had any remembrance of the affair. The wound was attended with no ſymptoms during the firſt days.

Yet ſcarcely was the ſeventh day paſs'd over, but it was ſeiz'd with a gangrene: and to the gangrene a fever was join'd. However, the gangrene being remov'd in the ſpace of a few days, the fever was remov'd likewiſe. After this the patient complain'd of a pain that oppreſs'd the poſterior part of the head, which, however, was not violent. But about the twentieth day he was ſeiz'd with a fever, a rigor, and a vomiting. And this fever returning afterwards, without the vomiting, ſometimes twice, and ſometimes three times, every day, all the vital actions gradually decay'd, and the patient was carried off about the thirtieth day.

The os ſincipitis, on the right ſide, near to the ſagittal and lambdoidal ſutures, had its exterior lamina ſomewhat injur'd and broken; but internally it was perfectly ſound. Betwixt the two meninges, and in the ventricles of the brain, was ſerum; the whole of which weigh'd nearly four ounces. The cerebrum was ſoft and flaccid; and was contain'd in a pretty lax ſpace within the cranium.

10. In this patient, four of thoſe circumſtances ſeem'd to be united, which, when join'd together, may juſtly give us reaſon to believe that there has been a very conſiderable concuſſion of the brain: the fall from a high place, the ſtupor immediately following the fall, together with the total forgetfulneſs of the fall itſelf, the cranium not being broken, and the interval betwixt this and the brain being encreas'd.

Ludovicus Duretus (*q*), upon that paſſage of the *Coacæ Prænotiones:* "They "who have a concuſſion of the brain, and have felt pain therein after being "ſtruck, or having fall'n, are immediately bereft of their ſpeech, do not "ſee nor hear, and for the moſt part die," ſufficiently ſhows how much more liable to concuſſion the brain is, "if it happen to have loſt that fulneſs "or plumpneſs that took up the whole cavity of the cranium." And as Falloppius (*r*) (in the ſame manner as Fernelius (*s*) in the full moons) acknowledges this fullneſs, "when the moon ſhines through the whole night;" ſo he affirm'd it to be true, that, "when there is no full moon, the ſkull is "not quite fill'd up by the brain, but there is ſome ſpace, and that the veſ-"ſels, by which the parts are connected, are a little diſtracted;" and that he himſelf "had obſerv'd it in diſſections."

But whether this has (by the anatomiſts after him, as Piccolhominus, whom I before ſpoke to you of (*t*), when I happen'd to be upon the ſame ſubject) not only been affirm'd in words, but confirm'd by accurate obſervations alſo, I do not call to mind; although this confirmation might very well agree with the opinion of thoſe who did not doubt but, according to the various phaſes of the moon, the force of diſeaſes was various, particularly of diſeaſes affecting the head, and that the danger from wounds of this kind is different.

(*q*) Interpret. l. 3. tr. 2. c. 2.
(*r*) Tract. de Vulner. c. 12.
(*s*) Pathol. l. 7. c. 8.
(*t*) Epiſt. 4. n. 32.

Yet

Yet I remember to have read in ſome authors, and particularly in John Salzmann (*u*), that in ſeveral ſubjects, betwixt the anterior lobes of the cerebrum and the cranium, "a ſpace, almoſt equal to the thickneſs of an inch, "is ſometimes ſeen;" and even it has not appear'd to me that the cranium has been equally fill'd with the brain, at leaſt not in all, as I have hinted in the Adverſaria (*x*): although whether this variety anſwer'd to the various phaſes of the moon, is neither ſaid by them, nor has ever, to confeſs the truth, been attended to by me.

It does not, indeed, eſcape me, as Gliſſon (*y*) formerly aſſerted, "that in "living animals there are only potential and not actual cavities," betwixt the viſcera of the belly; "and that all the parts thereof are contiguous, by "the force of the equable compreſſion of the abdominal muſcles;" and, at the preſent day, that no interval is acknowledg'd by many of the moſt excellent men, betwixt any of the parts of a living body whatever. However, as the cranium is unchangeable in its figure, and the brain may be more or leſs turgid, either from the phaſes of the moon, as is aſſerted by the very learned Mead (*z*), or from any cauſe whatever, which may encreaſe or expand the blood; I do not well ſee how we can deny, but the brain may ſometimes be more or leſs diſtant from the ſcull, even in the living body. And to this may be added, the contraction and denſity of the brain; which, from what cauſe ſoever it may ariſe, (for the ancients, and among theſe Liebautius (*a*), ſuppos'd it to happen from old age itſelf) muſt of courſe diminiſh the bulk of the brain, and conſequently make it retract from the encloſing cranium.

At leaſt Littre (*b*) not only found the ſubſtance of the cerebrum in the ſtate I have mention'd, but alſo found it at a conſiderable diſtance from the cranium, in a robuſt youth, who had run, in the moſt violent manner imaginable, with his head againſt the wall, ſo as to kill himſelf in the ſmalleſt moment of time. And although he conſiders this ſtate of the brain as the effect of the concuſſion; there will be ſome, perhaps, who, with Duretus, would rather chuſe to conſider it as the cauſe of the concuſſion being more violent; and ſtill a greater number, who will conſider the ſcull's not being broken, and giving way, and the daſhing of it againſt a hard and immoveable body, as the cauſes of this concuſſion being ſo violent.

For you know much is attributed to both theſe cauſes of concuſſion by the more modern ſurgeons; to the ſecond for this reaſon, that "the brain being "ſhaken againſt a hard body, and driven back again thereby, ſuffers two "motions, diametrically oppoſite, in one moment of time;" and to the firſt, becauſe "if the cranium is not broken, the whole impetus of the percuſſion "is directed to the brain," in conſequence of its being "intercepted" by no large fracture, or by "a bone which is broken into many pieces."

Why then, you will ſay, ſince in the old man you have juſt now deſcrib'd from Valſalva, theſe two cauſes were not wanting, (for he had daſh'd his

(*u*) Differt. de mira cranii Fract. §. 17.
(*x*) VI. Animad. 84.
(*y*) Tract. de Partib. Continent. c. 16. n. 21.
(*z*) De imper. Sol. ac Lun.
(*a*) Schol. ad Holler. Comm. in Hippocr. Aph. 58. S. 7.
(*b*) Hiſt. de l' Acad. R. des Sc. A. 1705. Obſ. Anat. 12.

head

head againſt the ground, and had not his cranium fractur'd) and though there ſeem'd to be ſo many other circumſtances from whence a great concuſſion of the brain might be conjectur'd, did he not die before the thirtieth day, nor ſuffer ſo conſiderable diſorders, nor yet ſhow any blood, or pus, to have been extravaſated within the cranium? I ſuppoſe becauſe he, probably, did not fall from a very high place, though from a place of ſome height; nor yet upon ſtones; and becauſe part of the violence of the blow was intercepted by the external lamina of the cranium giving way, and being broken in pieces. And the ſlight and ſhort ſtupor, and the loſs of memory, which then happen'd, as they happen'd without the other diſorders that are enumerated by Hippocrates, ſhow'd the concuſſion of the brain to have been leſs.

For our Peter de Marchettis, as you have it there (*c*) in the Sepulchretum alſo, ſaw "ſome perſons who had only this ſymptom appear after a fall, or a "blow upon the head, (that is to ſay, an alienation of mind, with a priva-"tion of ſenſe and motion;" which are certainly more violent ſymptoms than thoſe that immediately follow'd the fall of our old man) ſaw thoſe perſons, I ſay, "quite free from diſeaſe on the following day."

Since, therefore, this concuſſion was more ſlight, and ſo much the more ſlight, if the brain happen'd to be at that time ſoft and flaccid, or approaching nearly to this ſtate, it is not to be wonder'd at that the larger blood-veſſels were none of them ruptur'd; but only ſuch very ſmall ones as would naturally diſcharge, by a very ſlow diſtillation, thoſe four ounces of ſerum, which, by gradually injuring the vital actions, at length totally deſtroy'd the man.

But if you ſhould chooſe rather to ſuppoſe that fluid to have proceeded gradually from the ſmall veſſels, not of the blood, but of the lymph, which were ruptur'd, ſuppoſing that, by this means, both the rupture of theſe veſſels, and the long ſtagnation of that extravaſated matter, without any evident corruption, may be better conceiv'd of; you will have ſome authors, in conjunction with whom you will think, and among theſe Rohault (*d*), and before him Bohn, who has even produc'd the diſſections from whence he made this conjecture (*e*); and has affirm'd, in a ſucceeding work (*f*), what he at firſt had left undetermin'd, that he had ſeen the lympheducts "about "the convolutions of the brain, in particular, very turgid" in a certain boy.

However, that ſome veſſel is broken in the concuſſion of the brain, appears from very frequent obſervations; to which you may add that publiſh'd by Chriſtian Vater (*g*): yet that this is perpetual in a fatal concuſſion, as if the extravaſated humours always were the cauſes of death, and the concuſſion of the brain never was of itſelf fatal, it does not ſeem poſſible for thoſe to aſſert, to whom the hiſtory I have quoted from Littre, and another, in like manner, of the celebrated Hævelius (*h*), are known. For in neither of theſe was any thing found to be extravaſated after the moſt violent blow upon the head.

(*c*) Schol. ad Obſ. 12.
(*d*) Tr. cit. ſupra ad n. 4. c. 11.
(*e*) De Renunc. Vuln. Sect. 2. c. 1.
(*f*) De Trepan. diffic.
(*g*) Eph. N. C. Dec. 3. A. 9. & 10. Obſ. 165.
(*h*) Commerc. Litter. A. 1741. Hebd. 14. in fin.

Nor will any one have the better ſide of the queſtion, in aſſerting that an extravaſation was not made for this reaſon, that immediately after the concuſſion the motion of the fluids ceas'd, together with life. For beſides that it appears, from the ſecond hiſtory, that the man had liv'd about twelve hours after the blow was receiv'd; it is certain that neither of them was kill'd by an extravaſation where there was none at all. Death, therefore, was brought on by the concuſſion alone. Wherefore there is even room to doubt often, when an extravaſation is join'd with it, whether the one, or the other, of the two, had the greater efficacy in producing the cataſtrophe.

But in order to conceive in what manner the particles of the cranium are ſhaken, at the time of a violent percuſſion, and when ſhaken give a ſtill greater concuſſion to the brain than they ſuffer themſelves, and how the concuſſion of the brain renders it unfit for its neceſſary functions, by injuring its proper, not more inviſible than tender, internal ſtructure, by ſtretching the fibres thereof, by relaxing, by diſtorting, by compreſſing, by entangling, by lacerating, or by vitiating them, in any other way whatever; I ſay, in order to conceive how theſe changes happen, you may read the conjectures of Bohn (*i*). After having read which, you will, perhaps, think it quite ſuperfluous to enquire, whether any injury of the ſame kind be brought upon the ſmall trunks of the nerves alſo, where they already go out from the medulla oblongata, by the great concuſſion of the brain; and whether, if it be brought on, this injury, of itſelf alone, is capable of bringing on all thoſe violent diſorders which then follow.

But now, laying aſide theſe diſquiſitions, let us go on to propoſe more violent effects of wounds in the head, than appear'd in the old man deſcrib'd; whether we conſider them as following in the living body, or found in the body after death.

11. A woman, of more than forty years of age, falling from a high ladder, hurt the left part of her ſinciput, a little above the os temporis. She lay as in a manner dead after her fall: yet a little after this ſhe ſeem'd to be in health as before; nor did there appear to be any wound, except of the ſkin. And although, about the fourteenth day, the ſkin was ſeiz'd with a gangrene in the wounded part, which gangrene a fever accompanied, yet within a few days the gangrene was firſt overcome, and after that the fever. But before the thirtieth day, the fever came on again with a coldneſs: and to this was added, about the thirty fourth day, an apoplectic affection, with a loſs of ſpeech, and a privation of motion in the whole right ſide of the body, though the ſenſe remain'd at the ſame time. However, ſhe ſhow'd by nods and ſigns that ſhe underſtood what was ſaid: and a kind of epileptic convulſions, as it were, which ſometimes affected the whole body, agitated that part no leſs than they did the left ſide. At length ſhe died about the fortieth day.

The external lamina of the cranium was open'd into the form of a ſemicircle, in the part where the head had been injur'd; but the interiors of the bone were ſound. Yet the part of the pia mater which lay under that place

(*i*) c. 1. cit.

was

was ſanious; and the brain, in the ſame place, was ting'd of a browniſh and pall'd colour. But the ventricles thereof were ſound, as the whole right ſide was alſo.

12. A virgin of five and-twenty years of age, having fall'n upon the ground, was wounded with a very ſharp ſtone in the left part of her forehead. Being receiv'd into the hoſpital, ſhe was troubl'd with a continual fever, which increas'd every day. The wound began to be ſeiz'd with a gangrene, which in that ſeaſon, (for it was the month of June, 1689) came upon all wounds. Some time after, the patient became idiotic, as it were; ſhe heard but little; ſhe ſpoke not at all; ſhe fix'd her eyes ſtedfaſtly on thoſe about her. At length, a tremor of the whole body came on, during which ſhe died; and this was about the beginning of the twenty-eighth day.

The bone that lay beneath the wound was hollow'd out with a ſmall dent, and a foramen, as it were, externally; about which were ſeen three chinks. But neither theſe chinks, nor the foramen, reach'd to the internal parts. Yet the meninges, in that part which anſwer'd to the wound, were both of them eroded; and from hence a ſerous colluvies was diſcharg'd, which, being diffus'd through the whole ſubſtance of the brain, had infected it with a diſagreeable odour, and ting'd it of a blackiſh colour.

13. If it had happen'd to be the ſame ſeaſon wherein a gangrene came on in the wound of the head of the woman, and of the old man laſt ſpoken of, and of the man of whom we ſpoke almoſt in the beginning (*k*), that it was in the caſe of this virgin; we might, perhaps, refer hither a paſſage from the fourth book of the Epidemics (*l*): "In Aenum, whoſoever was "wounded in the head, the wound had a horrid aſpect, was malignant and "ſuppurated:" and, certainly, that obſervation of Pigræus, which you have there in the Sepulchretum (*m*), and which mentions a certain year "wherein "a gangrene came upon almoſt all wounds," may be ſuppos'd to relate to the preſent caſe. At leaſt, ſome preceding deprav'd ſtate of aliments, or preſent conſtitutions of air, although ſometimes hid from the ſenſes, add, in general, a deprav'd ſtate of ſome other particular diſorder to diſeaſes happening at that time; as has often been obſerv'd by phyſicians; and particularly a gangrene, in general, to all wounds, as happen'd ſome years ago at Paris (*n*), and even in the very city which we are at preſent ſpeaking of, I mean that of Bologna (*o*).

14. A young man, of eighteen years of age, ſlender, and of a blackiſh colour, having receiv'd a blow by a ſtone that was thrown againſt one of the oſſa ſincipitis, where the temporal muſcle ariſes from it, paſs'd two days without any ſymptom worthy of remark, if you except a fever. But on the ſixth day after that, as he lay in the hoſpital of St. Mary de Vita, the wound became livid, and the diſcharge which came from it was exceedingly fœtid; beſides which he had an acute fever. To theſe ſymptoms was added, near the eighth day, a ſoporific diſorder; ſo that when ſpoken to, he made no

(*k*) N. 3.
(*l*) N. 26. Apud Marinell.
(*m*) In Schol. ad § 6. Obſ. 6.
(*n*) Malovin Mem. de l'Acad. R. des Sc. A. 1748, & 1741.
(*o*) Vid. Commerc. Litter. A. 1738. Hebd. 42. n. 1. ſed & aliis poſtea annis idem accidit ibidem.

anſwer.

anſwer. Sometimes he ſent forth a kind of ſuſpirious voice. His whole face became tumid and yellow. With all theſe ſymptoms he went on to the eleventh day; on which, with a very great expiration, he died.

The whole body ſeem'd to be that of an icteric perſon. From the wound a purulent matter had made itſelf many paſſages betwixt the cranium and the cutis; which it had alſo eroded. And the bone had contracted ſome roughneſs on the ſurface, from the ſtroke of the ſtone; but ſhow'd no injury on the internal ſurface, which fell under the notice of the ſenſes. However, betwixt the bone and the dura mater, in the interſtices of the veſſels of this membrane, was obſerv'd a cineritious matter, not much unlike a condens'd pus, in that part only which lay under the blow: and in the ſame part only the cerebrum had contracted a livid colour, to the depth of two inches.

All the other parts within the cranium were ſound. All the parts in the thorax were ſound alſo. But the blood was extremely fluid, except that, in the right ventricle of the heart, was the beginning of a polypous concretion.

15. Another young man, of the ſame age, of a ſanguineous temperament, and of a fattiſh habit of body, was wounded, on the firſt of November, in the year 1688, in the upper part of his forehead to the left ſide; on which he immediately fell down, being ſomewhat confus'd in his head. Being brought from the place of his fall into the hoſpital of St. Mary de Morte, he ſeem'd to hope that he might have a ſucceſsful cure, as he perform'd all the natural functions of life, and was without any fever. But behold, on the eleventh day, he was attack'd with a fever; which becoming more violent on the day following, gave occaſion to open a vein once more. The wound, inſtead of concocted pus, diſcharg'd a ſerous and bloody humour: the part of the forehead which lay under the wound became ſwol'n: and pains of the head, limbs, and back, were added; which, about the end of the fifteenth day, degenerated into ſpaſmodic affections. And at the ſame time, as he began to be delirious to ſuch a degree, on the beginning of that day, as to make it neceſſary to confine him down in bed, he ceas'd to live any more.

The common integuments about the wound being cut aſunder, a great quantity of ſanious matter was found to lie therein, and extend itſelf quite to the eye, where the forehead was ſwell'd. But the bone had been injur'd by the wounding inſtrument, only ſuperficially. Theſe were the appearances externally. And within the cranium, betwixt the dura and pia mater, in the part where they correſponded to the wound, a quantity of ſanious matter was found; notwithſtanding, we could diſcover no mark of injury in thoſe membranes, and none in the whole brain; except that the ſanguiferous veſſels, which lay hid under the pus, were turgid with very black and coagulated blood, ſo as almoſt to reſemble varices. The viſcera of the thorax, which are ſometimes found to be affected in diſorders of this kind, were unhurt: and only a polypous concretion was found in the right ventricle of the heart.

16. From what is ſaid in the latter part of this hiſtory, you ſee why it was remark'd, in the latter end of the preceding hiſtory, that every thing in the thorax was ſound. But what marks of injury Valſalva has ſometimes ſeen in the thorax of thoſe who have died of wounds in the head, the four next obſervations will ſhew. The firſt will, at the ſame time, confirm ſome of

thoſe things which I have already ſaid (*p*) in regard to the injuries of the nerve which is reflected under the eye-brow. For, according to the different force and ſtate of theſe injuries, ſometimes ſlight convulſions, which ſpread no farther than the eye, ariſe; but ſometimes very violent and far-diffus'd ones. To theſe ſlight convulſions relates, perhaps, in ſome meaſure, that paſſage of the *Coacæ Prænotiones* (*q*) which I have mention'd in a former work: "The ſight is obſcur'd in wounds made upon the eye-brow, and "a little higher:" and to the very violent ones, in my opinion, the words of Lanciſi, which I have likewiſe quoted heretofore (*r*), refer, "that wounds "which happen in theſe parts are very dangerous:" and to the ſame, I ſhould believe, related, in ſome meaſure at leaſt, the convulſion of the face in the man whoſe wound was deſcrib'd above (*s*) at the eye-brow; as well as thoſe much more widely-diffus'd and very violent convulſions, which immediately follow'd the wound that was inflicted on the part I ſhall ſpeak of immediately.

17. A young man, of ſix-and-twenty years of age, had a ſtone thrown at him by an enemy, and was wounded on the right ſide of the left eye-brow. He fell down immediately, indeed; but ſoon roſe up again, and purſu'd his enemy with alacrity. He afterwards came to the hoſpital of St. Mary de Vita with the ſame vigour of mind: where, after the proper remedies were applied to the wound, it was neceſſary, in a manner, to compel him to remain; ſo light did he ſet by a wound of this kind. On that very day, the paroxyſm of a quartan intermittent fever, wherewith he was then troubl'd, happen'd to be expected, and really came; but it became a continual fever, with a large and vehement pulſe, and a conſiderable pain of the head.

About the ſeventh day a delirium was added to the fever, together with ſome convulſive motions. Near the eleventh, one or two febrile acceſſions came on, with a peculiar rigor. At length, the delirium ceas'd, and the man lay in a ſoporoſe ſtate, except that he was ſhaken by convulſive motions. And, indeed, thoſe who were about him ſaid, that they had, many times in the night, obſerv'd him to have rais'd himſelf up from the bed by an almoſt incredible exertion, lifting up his head, and clinching both his hands: at the ceaſing of which motions he lay like a perſon dead. Yet his right hand was for two days before his death paralytic, as far as related to the motion; for as to the ſenſation, it was not quite deſtitute of that; but after eight hours, the right foot began to be mov'd more weakly likewiſe. And his reſpiration having already become laborious before this time, he at length died in the concluſion of the fourteenth day.

By examining the wound externally, a little abſceſs was obſerv'd at the ſide of it; and part of the ſanies of this abſceſs had crept, betwixt the muſcles and the ſkin, towards the ear. But the bone beneath the wound was fiſſur'd, and the dura mater that anſwer'd to it was ſlightly injur'd: the interior part of the cranium on the ſame ſide, that is, on the left, was fill'd with pus, which was ſhut up betwixt the dura and pia mater. And this pus the ſubſtance of the brain that lay beneath, ſeem'd to have imbib'd; for it

(*p*) Epiſt. Anat 18. n. 7.
(*q*) N. 3. apud Marinell.
(*r*) Epiſt. Anat. 18. n. 7. in fin.
(*s*) N. 7.

was

was of the ſame colour; but on the ſurface only. Every thing elſe was ſound; except that a little ſerum was found at the baſis of the cerebrum.

The thorax being open'd, in the lungs were found, here and there, various tubercles, of a conſiderable hardneſs: ſome of which, when cut into, diſcharg'd a pure ſanies; the others, being not yet ſuppurated, reſembl'd the firmneſs of a glandular body.

18. A boy, about thirteen years of age, was wounded by the throwing of a ſtone in the right part of the ſinciput, above the temporal muſcle. He immediately fell down, with ſome obſcuration of the internal ſenſes, and vomited. He was carried into the ſame hoſpital, but was not ſeiz'd with any fever till the fourteenth day. This coming on, a great quantity of ſanies was diſcharg'd by the wound; and a little purulent matter from the mouth by ſpitting. About the twentieth day a delirium came on; and about the twenty-fifth he died.

In ſeparating the ſkin from the cranium, about that and the pericranium ſmall abſceſſes were obſerv'd: but theſe had no communication with the wound, which fell under the notice of the ſenſes. Under the wound, however, the bone was broken and depreſs'd, and adher'd cloſely to the dura mater, in which it alſo had fix'd ſome of its acuminated particles. Yet no laceration of this membrane diſcover'd itſelf to the ſenſes; nor yet any injury of the brain, if you except one or two ounces of ſerum, which ran out by the infundibulum, while the brain was taken out. The thorax being open'd, the lungs were found to be very red, and in them were found ſmall abſceſſes full of pus.

19. A young man, being ſtruck by a ſtone on the left ſide of the ſinciput fell down in conſequence thereof: yet he came by himſelf into the hoſpital of St. Mary de Morte. There were no ſymptoms of diſeaſe. About twenty days after, when the patient had indulg'd himſelf in eating, a dreadful fever came on; which, by returning many times, afflicted the patient very much. And although he was freed from this fever, yet a cicatrix could never be brought on the bone, which was laid bare in the wound, as long as he liv'd. After theſe fevers, the patient was attack'd with a cough; which, for a long time, was dry, till two or three days before death he threw up a purulent matter by ſpitting. In the mean while, a gangrene had ſeiz'd upon the buttocks by long lying: and beſides, on that night which preceded his death, a large abſceſs was obſerv'd in the back; and this, being ſpontaneouſly ruptur'd, diſcharg'd a great quantity of pus. Wherefore, no ſooner had he paſs'd over the ſecond month but he died, without any injury of the intellectual powers.

The body, from a long diſeaſe of this kind, and from delay, becauſe we were not permitted to diſſect it till ſome days after death, was very putrid and offenſive; yet was diſſected with accuracy. The integuments of the head being remov'd, at the upper ſide of the wound was ſeen a disjunction of the ſagittal ſuture: but the os ſincipitis, in that part of it which had been always uncover'd, was without any injury; yet in other parts it was here and there eroded with a caries, but eſpecially near the ſquamoſe ſuture, where the caries had perforated the whole thickneſs thereof. The dura mater, however, which lay under that bone was unaffected, except that it inclin'd to a ſome-

what livid colour, and ſhow'd ſeveral bony particles adhering to it; and on the internal ſurface, under the very place of the wound, it had an abſceſs annex'd to it, lying in the excavated ſubſtance of the brain, which was ſmall however, ſo as ſcarcely to be able to contain a little filbert; and from this, while that membrane was pull'd away from the brain, a thick and green pus was diſcharg'd. In the diſſection of the brain a ſerum, but in ſmall quantity, was obſerv'd in the baſis of the cranium.

The thorax being open'd, the lungs were found to be hollow'd out with many and various ſmall abſceſſes; ſome of which, inclining from the nature of a tubercle to the condition of an abſceſs, contain'd a ſanies not as yet perfect, but ſuch as had only begun to be maturated into a fluid and ſanious matter. The pericardium contain'd a great quantity of water; the heart no polypous concretion.

At length we thought proper to enquire whether any paſſage lay open to the cavity of that large abſceſs in the back, through the interſtices of the muſcles, whereby matter might have flow'd thither from the head. However, no appearance of this kind was met with; as the parts which lay between, and eſpecially the external ones, were ſound. But the muſcles in this body were here and there pale, and thoſe that are call'd abdominal were livid.

20. A man, of fifty years of age, was ſtruck with a ſtick on the left part of the ſinciput, no morbid ſymptom being the conſequence of the wound. He came by himſelf to the hoſpital; where, by experienc'd ſurgeons, there was judg'd to be no injury, but an external one; and the cure ſucceeded happily till the fourteenth day, without the appearance of one bad ſymptom. But on that very day a fever attack'd him, with a rigor and a pain in the belly. On the following days, in like manner, a difficulty of reſpiration came on, with a ſenſe of weight, a cough, and a purulent ſpitting. And at length he died, about the twenty-ſecond day.

As nothing morbid, beſides that injury which appear'd externally, could be found in the head; that is, neither in the cranium nor the brain, except that a little ſerum flow'd out during the diſſection of the latter; the thorax was open'd. Both of the cavities of which were full of pus; and the lungs, although looſe from the ribs, were found to be diſtinguiſh'd with many tubercles, ſome of which, being already ſuppurated, emitted a ſanies upon inciſion.

In the pericardium was but a ſmall quantity of water. In both the ventricles of the heart were polypous concretions, that in the right being very large, that in the left but ſmall. The belly at length being open'd, in the right part of the liver frequent tubercles were ſeen; and amongſt theſe, ſome which had already come to ſuppuration.

21. You ſee that Valſalva is induc'd, by his own obſervations, to ſay (*t*), that the viſcera of the thorax are ſometimes affected in wounds of the head: although he might have been induc'd even by others. For Nicolaus Maſſa (*u*) had already ſeen, in the year 1553, Victor Trincavella, with other very learned men, being preſent, ſuch things as I do not remember to be extant, and not only here in the Sepulchretum, but even not in any authors who have treated

(*t*) Supra, n. 15. in fin. (*u*) lib. Introd. Anat. c. 28.

of

of ſubjects of this kind; for which reaſon I will mention them to you here in a brief manner.

A certain man having receiv'd a wound upon the right ſide of his head, near to the ſagittal ſuture, together with a wound of the meninges, he died delirious and paralytic; which paralyſis, for the moſt part, ſays he, is wont to happen on that ſide of the body which is oppoſite to the wound. In the head were found two impoſthumes, the pus of which was laudable; one in the ſubſtance of the brain, near to the wound; the other in the poſterior part of the cerebellum. And in the thorax was a great quantity of ſanies, and that of an ill-condition'd kind, found within an ulcer of the left lobe of the lungs, the cavity of which was larger than half the ſhell of a hen's egg. There was alſo a manifeſt ſanies on the external ſurface of the left auricle of the heart, the whole of which was ulcerated. But even in the right ventricle of the heart, and in the carnea columna, was a remarkable impoſthume, which aſcended quite up to one of the valves; this valve alſo being affected with a conſiderable tumour of the *apoſtematous* kind.

And that you may not ſuppoſe theſe apoſtems to have exiſted in the thorax, before the wound; Maſſa aſſerts, that he knew the man, and that he had not ever complain'd of any pain, nor was troubl'd with any cough, even after he lay ill of the wound, *&c.*

To this ought to be added the obſervations of our Marchetti (*x*). And as theſe are much more known, and even related in the Sepulchretum (*y*), you may there ſee how often he found the lungs and the pleura eroded in wounds of the head, and half the cavity of the thorax fill'd with pus; and how he argues againſt thoſe who do not deduce this from the wound of the head. For he himſelf did not doubt, by reaſon of previous pains in the neck, eſpecially in the hinder and lateral part, but a purulent matter deſcended from the wound into the cavity of the thorax. Yet this paſſage, as you have ſeen by the obſervation of Valſalva on the young man (*z*), could not be confirm'd, even in regard to the abſceſs of the back.

22. You have others then, beſides Valſalva, who, in caſes of wounds in the head, have ſometimes found pus within the thorax. There are even ſome who have found pus in the belly, as the ſame Marchetti (*a*), who has even found a taint of the ſpleen and purulent puſtules; as there are others, which I ſee transferr'd into the Sepulchretum (*b*), who ſay, that abſceſſes have been tranſlated into the ſtomach alſo, the inteſtines, and meſentery. Yet not only the ſame obſervers, and Marchetti and Bohn (*c*), who likewiſe mentions the pleura, the lungs, and the ſpleen promiſcuouſly, do not omit the liver; but moſt others mention this, as the only viſcus into which pus can be carried from the head when wounded.

And that you will learn from all the hiſtories and ſcholia which are propos'd under the ſixteenth obſervation in the Sepulchretum. Nor will you be puzzled by the careleſſneſs of the printers (*d*), who write *apoſtema in capite*, or

(*x*) Obſ. Med. Chir. 15.
(*y*) Schol. ad § 2. Obſ. 16.
(*z*) ſupra, n. 19.
(*a*) Schol. cit.
(*b*) Obſ. 5. § 4.
(*c*) De Renunc. Vuln. S. 1.
(*d*) § 1. & 3.

vulnere

vulneribus hepatis, inſtead of *apoſtema in hepate*, and *vulneribus capitis*. But it would, perhaps, rather hurt your underſtanding to believe, that Ballonius had propos'd, as a thing well-aſcertain'd to himſelf, what he has ſaid of an abſceſs obſerv'd in the concave part of the liver; ſince, upon inſpecting that appendix to his little book on convulſions, from whence this paſſage is taken, you do not find what we have in the Sepulchretum (*e*); "And this I know "to have been obſerv'd by moſt ſurgeons;" but the following words: "Whe- "ther this does really happen I am ignorant; yet I have heard that it has "been obſerv'd by the greater part of ſurgeons. But if it does happen, by "what means it can come to paſs, and whether it is probable that it can "happen, will moreover be worthy of enquiry."

You will be cautious then of placing Ballonius among the obſervers of this abſceſs, who ought, in fact, to be plac'd among the explainers of it; as, on the other hand, a certain perſon ought not to have number'd among the explainers, thoſe who were only witneſſes of the obſervation; but among the obſervers. And you will be ſtill more cautious, if you happen to be deſirous of explaining the affair, of ſuppoſing any thing that does not agree with the obſervations, as if, in moſt of them, or almoſt always, or always, as Barbette (*f*) does not ſcruple to ſuppoſe, pus were tranſlated from the head into "the liver alone." For you have read by whom it has been ſeen tranſlated even into the heart, the lungs, and the ſpleen: and, in regard to this laſt-mention'd viſcus, I wonder it ſhould be aſſerted by him, I do not mean in theſe caſes, but in general, "that it is very rarely found in a preternatural "ſtate, in the diſſections of bodies."

But we are often compell'd to theſe things, by a greater ſolicitude in explaining, than in obſerving, certain circumſtances. For which reaſon, among thoſe who have written of theſe things afterwards, the celebrated Molinelli is the more to be commended (*g*), becauſe he has very properly judg'd that the matter ought firſt to be accurately obſerv'd by him, rather than explain'd: and he ſaw pus ſometimes tranſlated into other parts, but not into the liver; and in many not tranſlated into the liver, nor into the other parts; yet in others into the liver certainly, but juſt in the ſame manner from other wounded and ulcerated parts, as from the head. And to convince you that it is not ſo frequently carried into the liver, take this remark with you, that it never happen'd to me, as far as I can remember, to ſee it: to Valſalva, in ſuch a number of diſſections, not more than once; and that when it was, at the ſame time, tranſlated into the lungs alſo, and into the cavities of the thorax itſelf, in great quantity.

Yet it may happen that he did not ſee it ſometimes, becauſe he did not enquire after it; and particularly in that young man (*h*) whoſe face became yellow before death, and whoſe whole body ſeem'd to be icterical after death; for you have, in the Sepulchretum (*i*), an example of a jaundice with hardneſs and pain in the region of the liver, and with the putrefaction of this viſcus, in conſequence of a wound in the head. But by reaſon of that yel-

(*e*) § 4. (*f*) Schol. ad § 6. (*h*) ſupra, n. 14.
(*g*) Comment. de Bonon. Sc. Inſt. T. 2. P. 1. inter Medica. (*i*) Obſ. 16. § 5.

lowneſs

lowneſs which Valſalva obſerv'd, it is not eaſy to believe that he did not enquire in what ſtate the liver was: and although, in thoſe eſpecially in whom there are theſe and other marks of the liver being injur'd, and the wound of the head becomes dry, or ſuddenly and unexpectedly diſcharges leſs pus, it may be ſuſpected by many confirming obſervations, which I have read, that the pus is tranſlated into the liver; yet the caſe is not to be predicted for a certainty: for there may be ſometimes a fallacy in the ſymptoms, whether many, or even all of them, occur.

23. If you read the obſervation of Molinelli (*k*) on a man in whom, as ſoon as the ſanies had ceas'd to flow from the wound of the head, the abdomen began to ſwell, and be tenſe; and yet there was no diſorder in the liver, but a kind of ſmall ulcers deform'd the ſurface of the inteſtines, with a great quantity of ſanies, and a great number of tubercles lying at a diſtance from each other, here and there; you will eaſily conceive, that if theſe diſorders had beſet the part of the inteſtine colon in particular, which lies immediately under, and contiguous to, the liver, it muſt have happen'd that many ſigns of pus being tranſlated into the liver, though fallacious, would have been join'd together. And indeed it may ſometimes happen, that all of them come together, and, nevertheleſs, that he may be deceiv'd, who ſhall predict that pus will be found in the liver. Read over again the obſervations of Valſalva which I laſt of all deſcrib'd to you. You will, for the moſt part, find that the tubercles, either in the lungs, or in the liver itſelf, were not all ſuppurated; and indeed that many of them, at times (*l*), as yet reſembled the firmneſs of a glandular body.

What if, when the patient was dying, there were not as yet any that began to contain pus? And it ſeems according to thoſe obſervations wherewith, in my opinion, the obſervation of Molinelli may be join'd, that the pus carried from other parts into the viſcera, is not always depoſited in the form of a pus, but frequently at leaſt, that many of its particles, being mix'd with the blood, and entirely disjoin'd from each other, ſtick in ſome narrow paſſages, perhaps of the lymphatic glands, and by obſtructing or irritating them, as happens in the production of venereal bubos, and by retaining the humours therein, diſtend them, and give origin to the generation of a much more copious pus than what is carried thither; which generation is ſhown by thoſe rigors and horrors (*m*). And by this means we may alſo conceive how it is, that much more pus is frequently found in the viſcera, and cavities of the bodies, than a ſmall wound could have produc'd.

But in what manner not only a few, but even ſometimes a great number of purulent particles, paſs to other parts from wounds of the head; and not from theſe only, but alſo from the wounds of other parts, or their abſceſſes and ulcers; as when from the lungs of pleuritic patients, and even from ſuppurated limbs, it is often ſo evidently carried to the paſſages of the inteſtines, or kidneys, that the fœces and urine are purulent, as long as no pus flows from the limbs; and, on the other hand, thoſe excrements are pure as long as the limbs diſcharge a pus, and ſanies, which was the obſer-

(*k*) loco paulo ante indicato.
(*l*) n. 17.
(*m*) ſupra n. 17. 19. 20.

vation

vation of Parey (*n*); is ſufficiently explain'd by the circulation of the blood (*); which alſo illuſtrates another obſervation of the ſame author (*o*), and, to omit thoſe of others, one very excellent obſervation which is added lately by the very experienc'd Benevoli (*p*). Yet there is not room for theſe explications, if at any time the wound is dried up, in conſequence of the powers of nature decaying: which I here take notice of, that you may alſo beware of the fallacy of this ſign, which is propos'd among thoſe above.

24. The four obſervations of Valſalva that I have laſt produc'd, if you except one, which, like the others before produc'd, mentions no injury of the cranium that relates to the internal parts; all of them ſhow it to have been either looſen'd, or depreſs'd, fiſſur'd, fractur'd, or eroded. Let us go on, therefore, to deſcribe other obſervations which relate to each of thoſe kinds of injuries.

25. A woman, of fifty years of age, being buſy in waſhing linen on the bank of a river, was ſtruck, by another woman, on the right and poſterior part of the head with a ſtick, in conſequence of which blow ſhe fell into the water. Being immediately taken out, ſhe lay in ſome meaſure ſtupid. But the ſtupor being diſcuſs'd, and no other ſymptom appearing, and the hope of her ſafe recovery being confirm'd more and more every day; behold, about the fourteenth day ſhe was attack'd with a fever, which began with a rigor; of which fever ſhe died about the twenty-ſecond day.

The integuments of the cranium being taken off, it was obſerv'd that behind the right ear, which had been ſtruck, the indentations of the lambdoidal future were ſeparated from each other; and that from their interſtices a little ſerous humour was, by a ſlight preſſure, diſcharg'd. And within the cranium, at the ſame place, a little blood was ſtagnant. However, the brain was entirely ſound.

26. A young man, who was ſtruck with a ſtick upon the ſagittal ſuture, near to the coronal, paſs'd over ſix or ſeven days without any bad ſymptom; ſo that he did not lie in bed, but walk'd about the hoſpital. However, about the tenth day the wound was very fœtid: and one or two days after that the edges of the wound ſwell'd; and a certain heat was perceiv'd at the throat. After this a fever attack'd him, with a rigor: he was alſo attack'd with convulſive motions: and he at length died on the beginning of the thirteenth day.

The cranium, when examin'd externally and internally, did not ſhow the leaſt injury, except that the ſuture, where it had lain under the wound, had a tortuous little line running betwixt its indentations, which appear'd very evident by a browniſh colour. And at the very ſide of the ſuture, ſome portion of the dura mater adher'd to the cranium, in a peculiar kind of manner: this, however, being eaſily ſeparated, ſhow'd a very ſlight appearance of ſanies adhering to it on the ſurface. But the pia mater, which lay beneath, was pale. Beſides theſe appearances, nothing was obſerv'd; for the other parts, as well as the whole brain, were in a natural ſtate.

27. A man, of more than thirty years of age, receiving a blow with a blunt inſtrument on the upper part of the lambdoidal ſuture on the left ſide,

(*n*) Oper. l. 16. c. 49.
(*) Vid. etiam Epiſt. 25. n. 20.
(*o*) l. 10 c. 12.
(*p*) Obſerv. 22.

when

when returning to Bologna from the country, where he had been, fell down, indeed, but immediately roſe up; and inſtantly purſuing his journey, which was in extent three miles, betook himſelf into the hoſpital. While he lay there, it was obſerv'd that the wound was not of a very laudable colour, and that ſome days after an abſceſs was produc'd at the ſide of it: and this abſceſs being afterwards open'd by art, and in a ſhort time cleans'd, the cure of the wound ſeem'd to proceed in a much better way.

But many errors in diet being committed, and ſome febrile acceſſions having already preceded, about the eleventh day a very violent epileptic convulſion attack'd him: and when this remitted the patient did not ſpeak: although he ſignified that he underſtood what others ſaid. After this, convulſive motions were obſerv'd in the left ſide of the body; but in the right a paralyſis; his face ſometimes repreſenting the riſus ſardonicus as it were. In the mean while the pulſe was natural: but this afterwards becoming quick, turgid, and impetuous, death follow'd in a few days; that is, on the nineteenth day.

Drawing down the ſkin from the head, under it on the left ſide, and in many places, although in ſuch as were far diſtant from the wound, was found a ſtagnating pus, wherewith the os temporis was eroded on the ſurface. Moreover the lambdoidal ſuture, where it lay under the wound, had its indentations diſtinct from each other. And the dura mater ſhow'd a kind of cineritious colour, which it had contracted from pus that was collected betwixt itſelf and the pia mater. Part of that pus adher'd to the pia mater, in the form of a thick gluten as it were; the remaining part was fluid, and ſcarcely equall'd half an ounce. The ſubſtance of the cerebrum, which lay under this portion of the pia mater, to the extent of about two inches both in length and breadth, and of one in depth, inclin'd to a ſomewhat livid colour. However, the remaining parts of the whole cerebrum were ſound; if you except the exiſtence of a little ſerum, which was found not only in the ventricles, but alſo at the beginning of the ſpinal marrow.

28. An old man, of ſixty years of age, falling down from ſome height, receiv'd a blow upon his head, under the angle of the lambdoidal ſuture. At firſt he lay half-dead. But coming to himſelf afterwards, he compſain'd of a pain in the injur'd part: and this continuing he did not, however, confine himſelf to bed, till the fourth or fifth day, when he came into the hoſpital of St. Mary de Vita. There he not only could not bear the contact of the probe in examining the wound, but not even that of the lint or tow with which it was wip'd, without a great deal of pain. About the ſeventh day he was ſeiz'd with a paralyſis of the left arm; to which, upon opening a vein, motion was reſtor'd; but not in a perfect degree. This patient liv'd quite to the twenty-third day, on which he died in a ſoporoſe ſtate.

While the ſkull was ſaw'd open about the right temple, pus flow'd out from its cavity: and this pus had been alſo ſeen in the place of the wound, while the head was examin'd before cutting into it. But in this place no injury of the cranium was found, except a disjunction of the lambdoidal ſuture. In that part the cerebrum had an ulcer on the right ſide, to the depth of two inches, which had certainly been hollow'd out in this manner by the ſanies. But in the neareſt part of the left ſide it was of a paliſh

colour. Betwixt the dura and pia mater, where they cover'd the whole anterior lobe on the right ſide, was contain'd a moderate quantity of pus, with the colour of which the meninges had been ting'd. In the ventricles of the brain, and at the beginning of the vertebral tube, a ſmall portion of limpid ſerum ſtagnated.

29. The ſudden disjunction of the ſutures, if you attend to the cauſe of it, cannot happen without ſome conſiderable concuſſion of the brain; and if you attend to the effect, not without a violent diſtraction of the dura mater, which adheres more cloſely in that part than in others, and a laceration of the connecting ſmall fibres and veſſels. To this may be added, that the paſſage for the pus from the wound into the cavity of the cranium, is by this means with leſs difficulty obtain'd. It is not, therefore, to be wonder'd at, that, in theſe four obſervations of Valſalva, and in another, in like manner, which had been deſcrib'd above (*q*), the patients died, ſooner or later, where there was a disjunction of the ſutures; being affected with more ſlight or more violent diſorders, both according to the various diſpoſition of each, and according to the condition of other circumſtances, all of which cannot be known.

But as to a paralyſis occupying the ſide oppoſite to the wound or the injury; as this has been alſo obſerv'd in other patients, of whom I ſhall write below, as well as in the two laſt, I ſhall hint a few things in regard thereto hereafter (*r*). Now let us come from the laxated cranium to the depreſs'd cranium.

30. A certain herb-man was ſtruck in the forehead, near to the coronal ſuture, and a little to the left ſide, with an inſtrument which was more apt to bruiſe than to cut. After the blow, he felt the beginning of a ſlight ſwooning. Having come into the hoſpital juſt now mention'd, till the eleventh day there not only was no ſymptom of ill ſucceſs in the cure, but every thing ſeem'd to portend a happy event. However, on that very day the man was ſeiz'd with a vehement fever, which began with a rigor, and a vomiting of a great quantity of bile, which return'd again in the evening.

This fever recurr'd every day in the ſame manner, till, on the fourteenth day from the blow, which was the fourth before the next full moon, the wind blowing pretty nearly from the ſouth, he firſt became dull, yet ſo as to anſwer readily any one who aſk'd him a queſtion: but after a few hours, while he was turning himſelf from the right to the left ſide, he was depriv'd both of his internal and external ſenſes entirely, and was oppreſs'd with a difficult reſpiration; which, although it afterwards was brought back almoſt to a natural ſtate, yet return'd again in a laborious way: and in this manner he died on the ſame day that I have mention'd.

The os frontis was ſlightly depreſs'd in that place which was pointed out; and an unequal and ſharp ſcale, ſeparated from it internally, which inclin'd to the right ſide, had injur'd the dura mater on that ſide; ſo that betwixt this membrane and the pia mater pus ſtagnated, which had overflow'd from the vertex of the head almoſt to the baſis of the cerebrum, and the terminations of the cerebellum on the ſame right ſide. And the dura mater, which

(*q*) N. 19. (*r*) N. 46. & ſeqq.

lay under the pus, being ſomewhat thicken'd, was eaſily ſeparated from the cerebrum; which in that place inclin'd to a cineritious colour, not unlike the pus whereof I have ſpoken. Moreover, the cerebrum was very much confin'd within the cranium.

31. In regard to the brain being very much confin'd within the cranium, and the cauſes thereof, among which we have ſeen that ſome place the full-moon, and to which the ſtate of air, during the blowing of ſoutherly winds, as a cauſe of expanſion and rarefaction in the blood, muſt be added; both of which Valſalva has taken notice of in this hiſtory, you know, that I have written of them above (*s*). But as to the apoplexy ſeizing upon this man, while he turn'd himſelf from the right to the left ſide, as it has done ſo many others, according to what has been hinted in the *Epiſtolæ Anatomicæ* (*t*); the cauſe of it, in this caſe, might be, that the quantity of pus which was on the right ſide by this means compreſs'd the cerebrum, which was wholly ſubjected thereto, in ſo much a more dangerous manner, in proportion as it was now the more compreſs'd by reaſon of the more confin'd ſpace within the cranium.

32. A man, of fifty years of age, being wounded with a cutting inſtrument on the ſinciput, immediately vomited. Being receiv'd into the ſame hoſpital, the bone was found to be ſo depreſs'd under the wound, that it could not be drawn back by any art whatever. In the beginning there was no pain in the wound; but after ſome days it was affected with the ſenſe of a creeping motion. And to this convulſive motions of the whole body being added, on the beginning of the eleventh day life was exchang'd for death.

That portion of the bone which had receded from the other by the force of the percuſſion, adher'd ſtrongly to the dura mater, which was there ſlightly inflam'd. Betwixt this and the pia mater was a fluid ſimilar to ſerum, both in conſiſtence and colour.

33. A woman, who was about the ſame age, was wounded with a blunt inſtrument above the left eye-brow. After the blow, ſhe vomited and became ſtupid. Yet the ſtupor was, after ſome time, diſſipated; and the caſe ſeem'd to the ſurgeon to be going on very well, till, the tenth day being elaps'd, ſhe was ſeiz'd with a pain of the left ear, together with a horror and a coldneſs, which was ſucceeded by a heat. At length, convulſions of the whole body coming on, ſhe died within a few days.

The bone which lay under the part where the blow was receiv'd, had wounded the brain by an acuminated lamina; and the brain was, for that reaſon, ſanious in this part, and corrupted. But although the diſorder had deſcended very deeply, it did not, however, reach to the ventricles. Part of the ſanies had flow'd down to the baſis of the cerebrum, about ſome of the pairs of the nerves.

34. A woman, of thirty years of age, had been ſtruck upon the head with many ſtones; a languor and vomiting being the immediate conſequences thereof, which continu'd for many days. Yet the wound did not ſeem to promiſe an unhappy event. But about the tenth day, a fever coming on, with a coldneſs, it became dry and pallid. To theſe changes was added a

(*s*) N. 10. (*t*) XIII. n. 24.

delirium, which degenerated gradually into a ſoporoſe affection. And by this the patient was at length carried off about the twentieth day.

In the right ſide of the cranium was found a fiſſure of four inches in length; yet that portion of the cerebrum which lay under the fiſſure, was affected with no injury. But on the left ſide, where there appear'd to be a very conſiderable contuſion externally, the cranium was not only cleft by a fiſſure, which was drawn in the form of a circle, and had a diameter equal to half an inch of the meaſure of Bologna; but it was alſo, in ſome meaſure, depreſs'd in that part: and, indeed, from that depreſs'd portion an acuminated lamina had receded internally, and had wounded the dura mater. To this membrane, therefore, a purulent matter adher'd in that part; and the cerebrum, which lay beneath, was morbid to the extent of three inches both in length and breadth, and to the extent of two in depth; ſo that the injury did not reach to the ventricles.

35. A man, of a middle age, being ſtruck in the right part of the ſinciput with a blunt inſtrument, but affected with no ſymptom whatever in conſequence thereof, came of himſelf on foot to the afore-mention'd hoſpital, and went to bed there. After two hours he began to ſtammer; and, a few hours after that, was ſeiz'd with a paralyſis in the whole left ſide of his body.

He, nevertheleſs, open'd his left eye perfectly, when he anſwer'd, in a ſtammering manner, to the queſtions which were aſk'd him: the right he kept half ſhut. But he could not even move the right part of his body, without great pains and endeavours. Two or three days after receiving the wound, he was delirious. At length, becoming lethargic, he died on the fifth day.

The head of this man Valſalva, indeed, could not himſelf diſſect, being taken up with more important buſineſs. Yet he did not omit to mark down what was related by his friends, Peter Molinelli and John Anthony Guicciardini, who had diſſected it. The cranium was broken in ſuch a manner, that two large fragments of it, being depreſs'd, had, by making an angle inwards, as it were, made a conſiderable wound in the meninges and the brain itſelf, and had penetrated into the ſubſtance thereof, to the breadth of two inches. There was in that wound of the cerebrum a coagulated blood; and the veſſels, alſo, were turgid with blood to a conſiderable degree. While the brain was taken out of the cranium, ſome portion of ſerum was diſcharg'd.

36. As to my heaping together ſo many obſervations here, I do not do it ſo much for the ſake of brevity; for many things remain to be added; as to prevent the ſame animadverſions from being frequently repeated. For thoſe things that ſeem to be worthy of peculiar attention, in any one of them, I will take notice of below in their proper places. In the mean while, however, let us not ſtand ſtill: but, as we have done in the examples of the cranium being depreſs'd, let us, moreover, ſubjoin other obſervations of its being broken or fiſſur'd.

37. A woman, of fifty years of age, fell headlong from a ladder upon the ground. A wound appear'd above the left eye: her face was tumid and pale; her temples were livid: blood was diſcharg'd from her mouth. The

woman

woman underſtood nothing, felt nothing, mov'd nothing except her right hand, and that only a little while, ſlightly, and feebly. She died fifteen hours after her fall

The external integuments of the ſinciput were red. In the bone which compos'd the ſuperior part of the orbit of the left eye, were many fractures. On the right ſide, the artery which paſſes through the dura mater, being lacerated, had pour'd out its blood; about two ounces of which were ſeen to be coagulated betwixt that membrane and the os petroſum. This blood, thus concreted, had injur'd that part of the cerebrum which correſponded to it, ſo as to make it appear as if it were eroded.

38. An old man, of ſixty years of age, being attack'd by a he-goat, fell down on the ground, and hurt the left part of his head. He could ſcarcely ſpeak: he vomited: he threw out blood from his mouth: he gave no ſign of any internal ſenſes: his hands were agitated by convulſive motions: his face was red: he therefore died after two days.

The injury of his head, which was about the upper margin of the temporal muſcle on the left ſide, ſeem'd to be ſlight externally. But when the ſkin was taken off, that muſcle was found to be univerſally ſuffus'd with blood: and when the cranium was open'd, a conſiderable quantity of grumous blood was found to adhere ſo tenaciouſly to the dura mater, where it correſponded to the ſame muſcle, that it ſeem'd to be one ſubſtance therewith. And in the ſame place there was a fracture of the ſkull, with a rupture of the internal veſſels.

However, as to the ſame membrane, where it correſponded to the right temporal muſcle alſo, a ſtill larger quantity of the ſame kind of blood adher'd, and could not have come thither by any means from the left ſide; and as no fracture of the cranium was, by any means, diſcover'd on the right ſide; Valſalva was very much ſuſpended in his mind thereon. For although, when he was afterwards about to examine the bony fabric of the internal ear, a ſubject on which he was then wholly employ'd, and had driven a chiſſel againſt that right part of the cranium with a mallet, a fiſſure came into his view; yet he was in doubt whether this was to be aſcrib'd to the mallet, or to the blow receiv'd in falling. As to what remains, the whole brain was in a natural ſtate, if you except a little ſerum which was in the ventricles.

39. A man, of fifty years of age, was ſtruck with a ſtone almoſt in the middle of the left eye-lid, where the nerve goes out from the orbit. Many hours being elaps'd after the fall, he was carried into the hoſpital I have ſo often mention'd, where it was neceſſary to tie him down in bed, on account of the very great convulſive motions whereby his whole body was agitated. His eyes were ſhut: the actions of his mind were at reſt. At length, when the thirty ſixth hour from the time of receiving the blow was completed, the convulſive motions having ceas'd for the laſt hour, he died.

Many portions of the cranium, above the orbit, were broken; and one of them that was acute prick'd the dura mater, which for this reaſon was inflam'd in that part. And, indeed, a fiſſure was alſo found on the oppoſite, that is, on the right ſide, in that very part which correſponded to the fractur'd bone on the left ſide. In the brain was found a ſerum in ſome meaſure

ſanious.

ſanious. However, as the head of this man had been wounded before alſo, you might ſee, in that part from whence a fragment of the cranium had been taken away, a kind of thick membrane, which ſupplied the place of a bone. To this membrane the dura mater ſtrongly adher'd.

40. Beſides this laſt circumſtance, which you will ſee agrees extremely well with what was obſerv'd formerly by Berengarius (*u*); and beſides that which relates to the nerve reflected under the eye-brow, the very injury of which is alſo ſucceeded by violent convulſions, as has been ſhown above (*x*); this obſervation contains two other circumſtances, whereon we may inſiſt a little. One of theſe, however, I ſhall more conveniently touch upon below (*y*). And the other relates to that celebrated controverſy in regard to the counter-fiſſure. Which moſt perſons were formerly induc'd not to acknowledge, by a reaſon that was weak, nevertheleſs, in conſequence of its depending upon that utility of the ſutures of the cranium, which they, following Galen (*z*), aſcrib'd thereto, as if they were created to ſtop the progreſs of a fracture; whereas fiſſures may be known to every one, as well as to us (*a*), which are produc'd from one bone of the ſkull into another, and even frequently into more than one.

Another difficulty likewiſe offer'd itſelf in regard to this queſtion; I mean, to confeſs the truth, that the caſe cannot be ſo plainly and clearly explain'd by any reaſonings or ſimilitudes whatever, as to make every one acquieſce therein. However, although the explications, which are now read in the diſſertation of Georgius Wolfg. Wedelius, *de Contrafiſſura* (*b*), were not as yet brought to light; it was not juſt to deny any thing for this reaſon, that the cauſe of it is not underſtood. Finally, the opinion of moſt perſons was moreover with-held by this argument, that very eminent anatomiſts and ſurgeons, out of whom it is ſufficient to mention Jacobus Berengarius (*c*), Gabriel Falloppius (*d*), John Baptiſt Carcanus (*e*), Iſbrandus Diemerbroeck (*f*), in ſo many caſes of fractur'd ſkulls, and in ſo many inſpections of them after (which I mean to ſay of Carcanus in particular, although I ſee none of his obſervations transferr'd into the Sepulchretum) had never found the bone fiſſur'd in the part oppoſite to the blow.

From hence, indeed, we might have argu'd the rareneſs of the counter-fiſſure; but could not have denied its exiſtence, if, at the ſame time, it were only certain that it had been actually ſometimes found by others. And that it has been found, not only many not recent, but even many recent, obſervations are extant to confirm: and as you have ſome of theſe here in the Sepulchretum, not under number five, as is erroneouſly ſaid by the printers, but under number eleven (*g*), and others in the diſſertation of Stoſchius *de Reſonitu* (*h*); I ſhall not take notice of them here.

Yet I will put you in mind of this, which Paulus (*i*) formerly hinted, that

(*u*) Tract. de Fract. Calvar. in Document. prope fin.
(*x*) n. 16.
(*y*) n. 48. in fin.
(*z*) De Uſ. part. l. 9. c. 17.
(*a*) Epiſt. 52. n. 35. 36.
(*b*) Sect. 1. membr. 3.
(*c*) Tract. cit. c. 1. & 2.
(*d*) De Vuln. c. 12. & Expoſ. in Gal. de Oſſ. c. 13.
(*e*) De Vuln. capit. Serm. 2. Lect. 6.
(*f*) Anat. l. 9. c. 4.
(*g*) § 2. 5. 7. 8. 9. (*h*) c. 4.
(*i*) De Re Med. l. 6. c. 90.

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the head being ſtricken in more than one part, "as happens in falling, the "fiſſure of the ſcull, which is brought on without a ſolution of continuity in "the ſkin, but appears afterwards, in conſequence of an abſceſs being form'd "around it, and the ſkin being cut through, was ſuppos'd to be made in the "part oppoſite to that on which the blow was receiv'd;" I will, I ſay, put you in mind of this, as it is neceſſary that it ſhould be cautiouſly and prudently attended to in the examination of every obſervation. For which reaſon Falloppius (*k*), although in one perſon he ſaw the bone fractur'd on the ſide oppoſite to that which had been ſtruck by the kick of a horſe, as there was a ſuſpicion that this fracture had been produc'd by being daſh'd againſt the ground, nevertheleſs thought he could not aſſert that he had ſeen a counter-fiſſure.

And Berengarius, Carcanus, and Diemerbroeck, have judg'd nearly in the ſame manner of this counter-fiſſure, when deſcrib'd by others: and very often, at leaſt, the patient cannot ſpeak, or remember how many blows he receiv'd, or in what places, or on what part of the head he fell. This muſt be attended to beſides, whether the fiſſure which is deſcrib'd in the oppoſite part be there only, or whether it be produc'd thither, beginning from the part which was evidently ſtruck, or from ſome other very near to it.

When thus continu'd, it is not properly the counter-fiſſure, of which the queſtion is at preſent; for they ſuppoſe, with Celſus (*l*), "that the gaping of "the bone is not found on that part where the ſkin is cut aſunder;" but that the bone is "fiſſur'd on the other ſide." If you, therefore, obſerve theſe things, you will perhaps find much fewer examples than ſome may imagine, in which you will think it reaſonable to allow of a counter-fiſſure.

41. Nor indeed is it properly a counter-fiſſure, if it at any time appear, that one and the ſame of the bones of the cranium had receiv'd a blow in one place only; and yet that it has a fiſſure, not in that place, but in ſome other: for that this may actually happen, was not denied by Carcanus (*m*), and his preceptor Falloppius (*n*). And, indeed, the latter of theſe authors has ſhown (*o*), that in this manner the words of Hippocrates (*p*) may be underſtood, in which others have believ'd that the counter-fiſſure, properly taken, was evidently ſpoken of; that is to ſay, that the bone is ſometimes broken in a part of the head diſtant from that where the wound is; for if he had intended to ſpeak of the oppoſite ſide only, there was certainly no reaſon why he ſhould conſider it as a great calamity (which he immediately ſubjoins) that the phyſician is then ignorant in what part of the head the fracture has taken place; as, by the general ſigns of a fracture then exiſting, it would be certain that it was in the oppoſite ſide.

But I do not ſee why he would not have (*q*) Celſus interpreted in the ſame manner, and by a ſimilar kind of reaſoning. For Celſus (*r*), where the marks of a fractur'd ſcull are found, and theſe he does expreſsly ſuppoſe to be found, but the fiſſure does not appear under the wound, would not have

(*k*) c. 13. cit.
(*l*) De Medic. l. 8. c. 4.
(*m*) Lect. 6. cit.
(*n*) c. 12. cit.
(*o*) Comm. in Hippocr. de Vuln. Cap. c. 14.
(*p*) De Cap. Vuln. n. 10. apud Marinell.
(*q*) c. 12. cit.
(*r*) c. 4. cit.

enquir'd

enquir'd after other ſigns of the part wherein the cranium is fractur'd, if he had meant only the oppoſite part; ſince he has ſaid, "And it does even not "uncommonly happen, that the blow has been receiv'd in one part, and "the bone has been fiſſur'd in another."

Be cautious, therefore, how, rather than give credit to Carcanus (*s*), you here give credit to John Baptiſt Corteſius (*t*), who readily affirms, "that the "more elegant Latins, by the *altera pars* of any thing, always underſtood the "oppoſite part." For if this author had attended, but a little while, to the words of Celſus, juſt now copied by me, he would not even have written, a little before, that Celſus, in this paſſage, "had ſpoken according to the "opinion of the vulgar," and not according to his own.

But much leſs are we to reckon among the inſtances of a counter-fiſſure, as has been done by ſome, thoſe in which there has happen'd to be either extravaſated blood, or ſanies, or any other mark of diſeaſe whatever, found within that part of the cranium which is oppoſite to the blow, at the ſame time that the bone was there uninjur'd. Since, altho' Berengarius (*u*), Falloppius (*x*), and others, aſſert, that they have found theſe appearances in many, yet they, at the ſame time, deny that they had ſeen a counter-fiſſure. For this is never underſtood by them, and the more ancient authors, unleſs the bone be fractur'd: and in what manner the veſſels may be ruptur'd, in the oppoſite part, under the uninjur'd bone, not only they have explain'd in their own way, but may be conjectur'd from the diſſertation of Wedelius (*y*), which I have already commended.

Wherefore, if you even ſuppoſe that no part of the ſcull, beſides what evidently appear'd to have been ſtruck, was ſtruck in that young man (*z*), and in that man (*a*), in whom, in the ſame manner as I ſhall ſay in the next obſervation, I have ſaid above, that a ſanies and marks of injury appear'd to Valſalva in the oppoſite part; you will have from whence to explain the affair, as in a woman in like manner (*b*); although in her it is more natural to ſuppoſe many blows; and in the old man (*c*), in regard to whom I laſt of all wrote that blood was extravaſated in the oppoſite ſide. And from thoſe things which I have taken into conſideration, in relation to the word counter-fiſſure properly, or leſs properly, taken, you would, without doubt, chooſe rather to aſcribe the fiſſure obſerv'd in the oppoſite bone, in the ſame old man, to the anatomical mallet, but that which was ſeen in him (*d*) whom we immediately deſcrib'd afterwards, to the one hoſtile blow, inaſmuch as it was not, like the former, found in a different and not contiguous bone, but in one and the ſame.

42. A man, of thirty years of age, who was very delirious from an acute fever, threw himſelf down from a window upon the ground, and wounded the left ſide of his head, above the temporal muſcle. He could not ſpeak: his face was red: the whole left ſide of his body lay immoveable; except that an hour or two after the fall, while the wound was handled, the foot con-

(*s*) Lect. 6. cit.
(*t*) Tract. de Vuln. Cap. P. 2.
(*u*) c. 1. cit.
(*x*) c. 12. 13. 14. cit.
(*y*) Sect. 1. Membr. 3. & 4.
(*z*) n. 5.
(*a*) n. 7.
(*b*) n. 37.
(*c*) n. 38.
(*d*) n. 39.

tracted

tracted itſelf ſlightly, and was afterwards extended. And in this manner he liv'd till the third day, when he died.

Under the left temporal muſcle was a fiſſure of the ſkull; to which, however, no internal injury that fell under the notice of the ſenſes correſponded. But in the part oppoſite to this, betwixt the dura and pia mater, was blood extravaſated to the quantity of about two ounces; ſo that the hemiplexia of the left ſide was brought on by this extravaſation, and not by the wound or fracture on the ſame ſide. However, the whole cerebrum was ſound, except that all the veſſels which crept through the pia mater, were very turgid with blood, and the neighbouring parts in ſome meaſure inflam'd: but theſe appearances, probably, related more to the delirium than to the blow.

43. You ſee how eaſily any one might be deceiv'd, who, conſidering only the ſituation of the wound, ſhould take upon him to judge of the ſeat of the cauſe by which the hemiplexy was produc'd. For that this ought not to be done will, in like manner, appear from an obſervation of mine ſimilar to this, which you read in the *Epiſtolæ Anatomicæ* (*e*).

But to the ſeat of the cauſe of a hemiplegia of this kind, which was enquir'd after by diſſection, as it ought to have been, beſides others which are deſcrib'd above, that hiſtory alſo belongs which I ſhall immediately deſcribe: for the other circumſtances that occur in the hiſtory laſt deſcrib'd, either in regard to the blood being found in the part oppoſite to the wound, or in regard to the veſſels being very turgid with blood in a delirium, you remember I have ſpoken of juſt now in part, and in part on a former occaſion (*f*).

44. A young man, of twenty years of age, being ſtruck by a ſharp inſtrument, had the left temporal muſcle cut in a tranſverſe direction. After the blow he proceeded on his way for a little time, but at length fell down, and loſt the power of ſpeech. However, to thoſe who aſk'd him queſtions he anſwer'd by nods, though ſlowly. Being brought into the ſame hoſpital which I have ſo often mention'd, after ſome days had paſs'd he ſpoke a little, though deliriouſly. In the mean while, he mov'd his right hand no more: yet if this were prick'd, the patient ſhow'd that it felt pain. About the fourteenth day he died.

The cranium being open'd, it was found that the wound, which had not only cut the temporal muſcle, but the bone, had penetrated deeply into the brain; and that a ſerous colluvies, which was found there, had, moreover, eroded the brain: ſo that the eroſion penetrated quite into the left ventricle. And as a ſerum not unlike this was diſcharg'd about the ſella equina, while the brain was taken out, it was probable that it had flow'd down thither, from the ſame ventricle, through the infundibulum.

45. A young man, about two-and-twenty years of age, receiv'd a very great blow with a cutting inſtrument, by which he was wounded at the upper part of the left temporal muſcle. He immediately fell down, and loſt his ſpeech; ſo that he ſcarcely ſeem'd to be alive. After which, the power of ſpeaking, and all the other faculties, were reſtor'd.

(*e*) XIII. n. 16. (*f*) Epiſt. 7.

But about the fourth day his *aphonia* return'd; although, after that, he ſometimes brought out a few words, yet ſeldom only: and with the *aphonia* were join'd convulſive motions; but theſe in the left part of the body alone ſometimes, and ſlight; yet in the whole right ſide of the body, they were continual, and ſo violent, that the body ſeem'd ſometimes to be curv'd to this ſide. During the torture of theſe ſymptoms, nevertheleſs, the patient ſhow'd, by nods, that he underſtood what was ſaid. However, as the fever increas'd every day, and the convulſive motions, at length, grew weaker from a decay of bodily ſtrength, having even quite ceas'd ſome hours before death, he died about the thirteenth day.

The wound had not only penetrated through the temporal muſcle, but had deſcended, through the bone that lay beneath, deep into the ſubſtance of the brain. The dura mater was become much indurated about the wound. About the ſame, and within it, a ſanious humour was found; from the pungent nature of which, perhaps, the convulſions had been excited: at leaſt, though the wound ſeem'd to have reach'd ſo far as to be only an inch diſtant from the left ventricle, yet it did not appear that the inſtrument had penetrated ſo far, but that the excavation had been made deeper by the eroding juices which were generated in the wound. In the ventricles of the brain a little ſerum ſtagnated.

However, that in this young man, the left part of the brain being injur'd, the convulſions were moſt violent in the right ſide of the body, Valſalva thought was to be referr'd to the ſame cauſe as the paralyſis, which he had before always obſerv'd in the ſide of the body oppoſite to the injury of the brain.

46. Among thoſe obſervations that have been hitherto deſcrib'd from him, you have one (*g*) wherein, although there was a paralyſis of that part of the body which was oppoſite to the injury of the brain, yet certain epileptic convulſions, as it were, ſometimes agitated this paralytic ſide, no leſs than that which was not paralytic. But you have another (*h*) alſo, wherein, although the oppoſite ſide was in like manner paralytic, convulſive motions were obſerv'd in that ſide which was not paralytic.

Yet you have not one in which the circumſtances occurr'd in a contrary manner to what they did in that other obſervation: and this, certainly, agrees perfectly with that "univerſal theorem" of Salicetus, which I have mention'd in the thirteenth of the *Epiſtolæ Anatomicæ* (*i*): where, however, I have not even conceal'd the dogmata of thoſe (*k*), who have not only aſſerted that a paralyſis, or convulſion, happens promiſcuouſly in one or the other ſide, but alſo that, for the moſt part, the ſide which correſponds to the wound is ſeiz'd with a palſy, and the oppoſite with a convulſion. With whom Ballonius ſo far agreed, that, in his little book upon convulſions, he took upon him to explain this queſtion in particular, which he alſo has propos'd in the very beginning of his book, "Why thoſe who are wounded in the right "ſide have a convulſion brought on in the ſound part," that is, in the part oppoſite to the wound.

(*g*) N. 11. (*h*) N. 27. (*i*) N. 14. (*k*) N. 15.

To

To this ſuppoſition they were impell'd by the dogmata of the ancients, particularly of Hippocrates; who repeats the ſame thing in ſo many places, that Marcellus Donatus (*l*), when he referr'd to them in particular, being overwhelm'd, as I ſuppoſe, with the number of them, forgot that which was quoted by me in the epiſtle I have mention'd (*m*); in which, however, that very ancient preceptor (*n*) has expreſsly taught, that thoſe who are wounded in the head "become diſabl'd in the left ſide, if the wound is in the right; "but if the wound is in the left ſide, in the right:" than which nothing can be more clearly ſaid; although Donatus aſſerts, "that Hippocrates has "no-where, as far as he remembers, ſpoken of a paralyſis of the oppoſite "part."

But as to thoſe more ancient authors, and many of their followers, imagining that not the latter, but the former, happens the moſt generally; I ſhould ſuppoſe it to have ariſen in great meaſure from hence, that as they did not diſſect the heads of thoſe who died, they argu'd, from the ſeat of the wound, which they ſaw in the head, the ſeat of the injury alſo that was brought on in the brain: or, if they ſometimes ſaw this injury to lie under the wound, by reaſon of the cranium being perforated by the blow itſelf, or by their inſtruments, during the courſe of the cure; they, at leaſt, did not at all ſuſpect that the greater and principal wound might be in the oppoſite part of the brain; contrary to what anatomy has taught us that we are to ſuppoſe, as has been demonſtrated above (*o*).

47. However, I do not ſay this becauſe I am ignorant that the ſide of the body which is oppoſite to the ſide of the brain that actually labours under the principal injury, is frequently ſeiz'd with a convulſion. For I very well remember what was related to the Royal Academy of Sciences at Paris (*p*) by Poupart, from his own anatomical inſpection; and, in like manner, from that of Chirac: nor am I ignorant of another certain obſervation, as it is one which is transferr'd into this ſection of the Sepulchretum (*q*). But I ſay it for this reaſon, that you may perceive what kind of obſervations I would alſo have to be attended to here, before it be determin'd by us what happens for the moſt part.

For they are not to be reckon'd up, but to be conſider'd, and not to be admitted, unleſs the diſſection of the head was perform'd. And this was perform'd in that obſervation of Maſſa which is mention'd above (*r*); juſt as in a great number which are either deſcrib'd from Valſalva, or read in the Sepulchretum; as that of Diemerbroeck (*s*), Dodonæus (*t*), Horſtius (*u*), and Reiſelius (*x*); in all of which you ſee, that the ſide of the body which was oppoſite to the injury of the brain, is deſcrib'd as having been affected with a paralyſis, and not with a convulſion. And, indeed, you ſee that thoſe in which a convulſion of one ſide, and a reſolution of the other, are obſerv'd,

(*l*) De Hiſt. Med. Mir. l. 5. c. 4.
(*m*) N. 14.
(*n*) Epid. l. 7. n. 19. apud Marinell.
(*o*) N. 43.
(*p*) Hiſt. A. 1700. Obſ. Anat. 19.
(*q*) Obſ. 7. § 2.
(*r*) N. 21.
(*s*) Obſ. 3. § 2.
(*t*) Obſ. 4. § 10.
(*u*) Obſ. 8. § 9.
(*x*) In Addit. ad hanc 3 Sect. Obſ. 24.

ſhow this latter to have been in the oppoſite ſide, and the former in that which was the ſubject of the wound: of which obſervations one is of Salmuthus (*y*), who, morrover, affirms that it generally happen'd thus; and the other of Ballonius himſelf (*z*): although, to ſpeak of no other faults, it is not ſaid in the Sepulchretum, by the careleſſneſs of the printers, what limbs were paralytic. And to this careleſſneſs I wiſh I could refer a blunder diametrically oppoſite to this: as when the obſervation of Fontanus is repeated (*a*); or when another, in like manner, of Bartholin (*b*) is repeated, which would relate to the queſtion in hand, if it had been remark'd in which ſide the limbs (for both ſides are mention'd) were firſt or moſt affected with palſy.

48. Yet even of thoſe who ſeem to have attended to nothing but the external ſeat of the wound, there were not wanting learned men who receded more or leſs, even before theſe times, from that dogma of Hippocrates, which is ſo frequently inculcated. Thus Donatus (*c*) has alſo taught that the contrary happens. Thus Cæſalpinus (*d*), from a review of thoſe paſſages of Hippocrates, ſays, "Yet in theſe days we frequently ſee not only "a convulſion, but alſo a paralyſis, ariſe in the ſame manner;" that is, in the part oppoſite to the wound. So Martianus (*e*), after ſpeaking of convulſion in that part, goes on to ſpeak of reſolution, and aſſerts as follows: "Experience, indeed, has ſhown us, that the reſolution always happens on "the oppoſite ſide."

And, indeed, before thoſe, Carcanus (*f*) had expreſsly ſaid theſe things: "Not the part correſponding to the wound, but the oppoſite, is always af-"fected with a palſy; as Hippocrates has very juſtly ſaid, and as experience "has taught us. It is true, that Hippocrates has ſaid the oppoſite ſide is "affected with a convulſion, and not with a paralyſis; but I ſay, that it is "rather affected with a paralyſis:" and this aſſertion of Carcanus is not only confirm'd by many others, but by that remarkable obſervation of the celebrated Daniel Hoffman (*g*); who obſerv'd, in a boy that had ſuffer'd "a "concuſſion of the brain, on the left ſide, with a conſiderable loſs of ſub-"ſtance," a very violent convulſive agitation of the left foot, and a para-"lyſis of the right ſide, which had made it altogether immoveable. And they, indeed, determin'd the ſeat of the cauſe of both affections to be in the ſame ſide of the brain, which is oppoſite to the convuls'd or paralytic ſide of the body; but have determin'd the cauſe of one of the affections to be different; as, for inſtance, an irritation, or an inflammation, if it be a convulſion; but a compreſſion, or a rupture, if a paralyſis.

In this manner, alſo, or a ſimilar manner, is to be underſtood what Valſalva has ſuppos'd in regard to the young man in queſtion (*h*), that convulſions are, in general, to be referr'd to the ſame cauſe that reſolutions or paralyſes are in others. But why the effects of this or that cauſe diſcover themſelves in the oppoſite part of the body, you will not eaſily underſtand, unleſs

(*y*) Sect. ead. Obſ. 3. § 7.
(*z*) Obſ. 17. § 1.
(*a*) Obſ. 5. § 7, & 8.
(*b*) Obſ. 4. § 6, & 7. conferend. cum l. 1. S. 15. Obſ. 27. § 2.
(*c*) C. 4. cit.
(*d*) L. 2. Quæſt. Medic. 10.
(*e*) Annot. ad Hippocr. Epid. l. 7. S. 1. verſ. 377.
(*f*) De Vuln. Capit. Serm. 3. lect. 5.
(*g*) Diſſert. de hac rariſſima ſanatione.
(*h*) N. 45.

you

you ſuppoſe ſome decuſſation. And this they ſuppos'd, and long before them others; in regard to which controverſy I have already ſufficiently ſhown (*i*) what ſeems to me the moſt probable.

Nor, although ſome do not ſo well approve of that decuſſation, which they themſelves ſay was formerly approv'd of by Hippocrates, and do not think that the origin and the effect of the ſpinal nerves ought to be deriv'd from the medulla oblongata, or higher; can I agree with them, unleſs they firſt ſhow how a paralyſis of the whole body is the conſequence of a conſiderable injury of the brain only; or how we can give a ſatisfactory anſwer to the queſton propos'd by any other ſuppoſition, whether a convulſion or a reſolution happen in the oppoſite ſide.

Moreover, of thoſe who, with us, ſuppoſe the reſolution, for the moſt part, to happen in the oppoſite ſide, there are who ſay that a convulſion happens in the other ſide; becauſe the muſcles on one ſide being reſolv'd, thoſe on the oppoſite ſide prevail over them, and contracting themſelves, draw the lower jaw, or the trunk of the body, or curve it, to that ſide on which the contracting muſcles are.

But to omit enquiring whether this contraction could properly be taken for a convulſion, or if it could, what it relates to thoſe convulſive motions of which we here principally treat; at leaſt, I will make the ſame enquiry which Cæſalpinus (*k*) made, from thoſe who were nearly of the ſame opinion even formerly: "What injury of the oppoſite muſcles can be ſuppos'd, if "the whole arm is convuls'd, or a leg, from a wound of the head in the "oppoſite part," or in the correſponding parts? For the muſcles of one arm, or leg, are not antagoniſts to thoſe of the oppoſite arm or leg; and in the limbs it is that thoſe convulſions whereof we ſpeak at preſent occur.

This was alſo obſerv'd by Thomas Bartholin (*l*), in a boy in whom, from a wound of the right temple, not only the noſtrils and mouth were convuls'd on the left ſide, but alſo the arm. For he has written thoſe things, ſuch as they are, that are contain'd in the latter end of the ſcholium affix'd to the ſecond article of the eighth obſervation in this ſection of the Sepulchretum; although it does not there appear from what author they are taken. And, certainly, if I may be allow'd to add this, in order to explain paralyſes which happen in the oppoſite ſide, we are oblig'd to have recourſe to the decuſſation of the nervous origins, ſtill higher than from the medulla oblongata; as has been already ſhown (*m*) from the reſolution of the oppoſite tunica retina: and this we might now confirm from the obſervation of Peyronius (*n*), of the ſight being loſt in the eye of one ſide, or reſtor'd, as often as either pus was retain'd in the oppoſite part of the cerebrum, where there was a deficiency of the ſubſtance of this part, whereby the corpus calloſum beneath was preſs'd upon; or was taken out from thence, whereby the preſſure was remov'd: and, in like manner, from another of the celebrated Petzius (*o*), who, when the left hemiſphere of the cerebrum was wounded in ſuch a

(*i*) Epiſt Anat. 13. n. 17. uſq. ad 22.
(*k*) Quæſt. cit. 10.
(*l*) Cent. 5. Hiſt. Anat. 2.
(*m*) Epiſt. indic. n. 18, 19, 21.
(*n*) Commerc. Litter. A. 1731. Hebd. 30. prope fin.
(*o*) & A. 1730. Hebd. 34. n. 2.

manner,

manner, that a great part of its ſubſtance was torn away and loſt, not only obſerv'd both limbs, on the right ſide, to be depriv'd of the power of motion, but alſo obſerv'd the ſight to be obſcur'd on the ſame right ſide, and ſcarcely any power of hearing to remain. Since then we are under a neceſſity of allowing this decuſſation, in order to explain a paralyſis in the oppoſite ſide, why ſhould we not acknowledge it in order to explain a convulſion?

However, Valſalva gives us the reaſon why, in the young man of whom we ſpoke laſt, thoſe very violent, conſtant, and long-continu'd, convulſive motions ceas'd ſome hours before death; when he ſays, that they went off from a defect of bodily ſtrength. So alſo thoſe extremely violent convulſions, which are deſcrib'd above in a certain man (*p*), had ceas'd to be troubleſome in the laſt hour of life. And there ſeems to have been the ſame cauſe why, in another man (*q*), and, in like manner, in a woman (*r*), the delirium at length degenerated into a fatal lethargy. But now let me give you other obſervations of the ſcull being fiſſur'd.

49. A young man of twenty years of age, was wounded with a cutting inſtrument, in the left part of the occiput. No ſymptom was obſerv'd after the blow; and in the beginning the cure promis'd ſucceſs. Yet in the progreſs of a few days the parts about the wound ſwell'd very conſiderably. On the twelfth day a fever came on, with a rigor and a delirium; and on the fourteenth day the patient was carried off.

While the body was taken away from the bed after death, a conſiderable quantity of blood flow'd out from the wound. And as ſoon as the diſſection was begun, the whole part of the head which had ſwell'd, was found to be turgid with blood. And although the inſtrument, wherewith the wound was inflicted, had left only a ſlight inciſion on the external ſurface of the bone, yet at the ſide of this inciſion was a fiſſure; and the dura mater which correſponded thereto had a purulent matter ſtrongly adhering to it: at the ſame time that the part of the cerebrum, which lay beneath, had chang'd its natural colour into black, in ſome meaſure. Beſides this, there was nothing worthy of obſervation in the whole remaining part of the cerebrum.

50. A man about thirty years of age, fell from a high place upon the ground. He loſt his ſpeech, and all his internal ſenſes. He vomited at firſt, after which only an endeavour to vomit remain'd: convulſive motions came on: his face was red: his pulſe was turgid: blood burſt forth from his noſtrils and his left ear: he breath'd with difficulty: and within twenty-four hours after his fall he quitted this ſtate of exiſtence.

On the left ſide of his head the temporal muſcle was contus'd, and the branches of the temporal artery were lacerated. When that muſcle was taken away, about two inches above the ear, was found a fiſſure of the cranium, in the form of an arch: and near to this fiſſure was coagulated blood, to the quantity of two ounces, betwixt the cranium and the dura mater; which membrane was nevertheleſs ſound, as the other parts of the brain were alſo.

(*p*) n. 39. (*q*) n. 35. (*r*) n. 34.

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In the belly, the ſtomach was turgid with air; as the lungs were alſo in the thorax, and eſpecially the right lobe: both of them being red, and not at all adhering to the parietes. The pericardium contain'd little or no ſerum: the ventricles of the heart contain'd a little frothy and fluid blood.

51. Another man, of fifty years of age, being ſtruck by a horſe, which had run looſe without his bridle, was thrown on the ground with ſuch a force, that when the hinder part of his head was daſh'd againſt a ſtone, the crack of a broken bone was plainly heard. At firſt he lay half dead: a little after he endeavour'd to ſpeak, but his words could ſcarcely be underſtood. From his right ear, from his noſtrils, and from his mouth, was blood diſcharg'd; and by the fullneſs and redneſs of his face, he ſeem'd to be almoſt ſuffocated. He was alſo attack'd with a vomiting; which ſoon after return'd with ſuch a violence, that he was ſuppos'd to be giving up the ghoſt. About half an hour after the fall, he no longer ſhow'd any ſign of ſenſe, nor yet of motion; except that once or twice he ſhook his head, and that he ſtill had the natural motion of reſpiration. His face was ſometimes livid, but for the moſt part pale. Finally, when twelve hours were elaps'd, he began to breathe ſlowly; ſo that to have argu'd from what generally happens to others, it might be ſuppos'd that he was about to die in a few moments of time. Yet he drew his breath in this manner for two hours, and died on the fourteenth hour after receiving the blow on his head.

The middle of the os occipitis, but a little more to the right ſide, was cleft aſunder into a very large and wide fiſſure; which being produc'd, thro' its baſis, to the foramen magnum, and cutting this obliquely, reach'd quite to the petrous proceſs. And a great quantity of extravaſated blood was found under the baſis of the cerebrum, and in the anterior part of it alſo, betwixt the dura and pia mater.

52. By what means it could happen in this man, that, although the occiput was fiſſur'd, a quantity of blood was, nevertheleſs, found to be extravaſated in the anterior part of the head, likewiſe, betwixt the meninges, you will very well conceive from what I have ſaid above (*s*): although, as there was a great quantity of blood under the baſis of the cerebrum, a part of that might, perhaps, have been carried forwards alſo, betwixt the meninges.

But if this was not the caſe, veſſels, and theſe very conſiderable ones too, are not wanting, which paſſing from one of theſe membranes to the other, may be very eaſily broken in great concuſſions of this kind; eſpecially if they are very much diſtended. And at the ſame time, others may be broken, on the outſide of the cavity of the cranium, from whence blood may flow out by the ears, the noſtrils, and the mouth. And theſe circumſtances may the more eaſily happen, if the fiſſure reaches to the petrous proceſs, as it did in this man; or if the blood, as in the former, be extravaſated near the new foramina of the tympanum, betwixt the cranium and the dura mater. For that there is a paſſage, by theſe foramina, into the cavity of the tympanum, and from this cavity, through the euſtachian tube, into the noſtrils, and

(*s*) n. 41.

fauces, there is no neceſſity for me to demonſtrate here, as I have already written ſufficiently on this ſubject in a former work, and even of the diſcharge of blood from the cranium by theſe paſſages (*t*).

53. A certain man, being wounded with a cutting inſtrument in the anterior, and, in like manner, in the poſterior, and left part of the head, and being receiv'd into the hoſpital ſo often mention'd, began, on the fourth day after his wounds, to complain of very ſevere pains therein; which, within a few days, had even ſpread over the whole body. On the ſixteenth day he was depriv'd of the power of ſpeech; and then, having loſt the uſe of all his internal ſenſes, he at length died on the twenty-fifth day.

The wound, which was receiv'd anteriorly, had reach'd quite to the beginning of the medullary ſubſtance of the brain. And the poſterior wound had paſs'd above the tranſverſe proceſs of the dura mater, and had penetrated into the cerebrum, quite to the cavity of the left ventricle. In that ventricle was contain'd a conſiderable quantity of ſerum, which, when laid upon the tongue, left a biting taſte for a long time together; ſo that, from the acrimony thereof, it might ſeem reaſonable to account for the irritation of the genus nervoſum; and from this irritation, perhaps, thoſe univerſal pains of the body.

54. A huſband-man, about forty years of age, was wounded by another huſband-man, almoſt at the right ſide of the ſagittal ſuture, with a bill, the beak of this inſtrument being driven in ſo deep as to reach within the cerebrum. His whole body was ſeiz'd with a trembling immediately upon the blow: his intellectual actions began to be retarded: and in all the parts of the left ſide the power of motion began to be diminiſh'd, till about the fourth day it was entirely loſt: the ſenſe of feeling ſtill remaining. His face was very red; his internal ſenſes were obſcur'd; his reſpiration became deep, and his pulſe weak. Finally, a reddiſh matter being thrown up from the mouth, he died on the ſeventh day.

The upper part of the cranium being cut off (which was not only perforated with the wound, but had alſo a bony ſcale rais'd up from its uſual ſituation) while the dura mater was cut into, about the beginning of the medulla ſpinalis, in order to extract the brain, a conſiderable quantity of blood flow'd out. However, the wound, perforating the longitudinal ſinus, reach'd from thence quite into the left ventricle; in which ſome ſerum, with a grumous blood, was conceal'd: and in the baſis of the ſame ventricle was ſeen a ſordid ulcer. In the thorax, the left lobe of the lungs was very turgid from ſtagnating blood.

55. It is natural to ſuppoſe it had happen'd to Valſalva, at the time of writing, as frequently is the caſe, that inſtead of the right ventricle, which lay under the wound, he ſet down the left; by reaſon of no animadverſion being added or interpos'd. For he who was wont to find the injury of the brain, in that ſide which was oppoſite to the paralytic ſide of the body; as from the many obſervations which are deſcrib'd above (*u*), and from what he has expreſsly added under number forty-five, very evidently appears; if he

(*t*) Epiſt. Anat. 6. n. 6. & ſeqq. (*u*) n. 11. 17. 27. 28. 35. 42. 44.

had

had now ſeen the contrary in this huſband-man, would certainly not have omitted to make ſome remark on ſo unuſual an appearance.

Yet this I do not ſay becauſe I think it impoſſible for that wound to be turn'd aſide, by a ſlight obliquity, from the right ventricle into the left, eſpecially as it lies ſo near; or becauſe I myſelf never diſſected bodies which had the injury in the hemiſphere of the brain that correſponded to the paralytic ſide of the body. For in the thirteenth of the Epiſtolæ Anatomicæ (*x*), I have not only pointed out ſome obſervations of this kind, made by others, but have even propos'd my own; although I have not conceal'd (*y*) what may ſtill be wiſh'd for in ſome of them, and in what manner we may explain both mine and the others, without overturning the dogma of Valſalva. And from thence you will, perhaps, be able to collect ſome things, in order to explain this obſervation alſo; not to ſay if any thing that is advanc'd in the obſervation under number thirty-five, in regard to the eye-lids, ſeems not very well to correſpond thereto.

56. I will now put the finiſhing ſtroke to this letter, by the hiſtories of two wounds, which were both of them inflicted by a ſharp-pointed inſtrument; but are ſuch as deſerve the more attention, by reaſon of the ſtroke appearing ſo ſlight in both of them, and by reaſon of their ſeeming to belong to the face rather than to the brain.

57. A man of thirty years of age, of a bilious temperament, being ſtruck, with a ſharp-pointed inſtrument, about the right eye, paſs'd over the ſpace of three days without any ſenſible injury of the animal actions. On the fourth day he came of himſelf into the hoſpital ſo frequently mention'd: and on the ſame day he died; contrary to the opinion of the phyſicians; becauſe there appear'd to be no where any mortal wound, but only a ſimple contuſion on that eye.

The ſkull being open'd, and a ſmall quantity of purulent matter being found betwixt the os frontis and dura mater, and the place being ſought for from whence this matter had come, the bone was found, by means of the probe, to be perforated, oppoſite to the right eye. Therefore the external and internal paſſage of the whole wound was diligently ſought after, and evidently found. That is to ſay, the inſtrument had paſs'd betwixt the eye and the orbit, without injuring the eye, to the bony arch of the orbit; and after perforating this arch, had penetrated into the ſubſtance of the brain, ſo that the termination of the wound was diſtant only by the breadth of a finger, from the parietes of the left ventricle.

However, although it was winter, and the body was diſſected ſoon after death, there was ſuch a flaccidity of the viſcera and veſſels, that they did not bear even to be touch'd without having their texture injur'd; and, at the ſame time, ſuch a putrid ſmell in the whole body, that Valſalva affirms he had never met with the like till that time; and aſcribes the whole of it to the deprav'd diſpoſition of fluids, which muſt have preceded the wound.

58. Of all the obſervations that I remember to have read, of the brain being injur'd through a wound of the orbit, ſcarcely any ſeems more ſurprizing than this, when I conſider what paſs'd betwixt the wound and the

(*x*) n. 25. (*y*) Ibid. & n. 26.

death of the man. For although others, of whom Horſtius (*z*), Ballonius (*a*), Fantonus, the father (*b*), and Jo. Phil. Burggraffius (*c*), have written, did not die till the ninth, the eleventh, the fourteenth, or the twenty-firſt day; and others, of whom Peter Borelli (*d*), and Schmidius (*e*), have ſpoken, ſuſpecting no danger, or making merry with their companions on that day, walk'd the length of two leagues, or of a quarter of a mile; yet the latter were either found dead on the day following, or fell down dead ſoon after; but the others, being either troubled firſt with a pain of the head, and after that with more violent ſymptoms, or being afflicted with theſe ſymptoms immediately after the accident, dragg'd through all that number of days under the painfulneſs thereof.

With neither of theſe have I claſs'd ſome others; as him whom Sennertus has deſcrib'd (*f*), that immediately became apoplectic, and died about the ninth hour from thence; becauſe that ſharp ſword ſeems to have entered the cavity of the cranium, through the *foramen nervi optici*; or, if you pleaſe, through the other neighbouring foramen, which is call'd *lacerum:* and that this might happen in the obſervation of Diemerbroeck (*g*), which I have look'd for here in the Sepulchretum in vain, you will not deny; the patient being depriv'd "of none of the animal actions" till the tenth day, and being then carried off, in the ſpace of two days, by a "very violent fever" which ſuperven'd.

But the muſket-ball, which was "driven through the orbit of the right "eye, in ſuch a manner that it emerg'd from the left part of the occiput;" as the celebrated Helwich (*h*) has deſcrib'd; does not ſeem to have been able to paſs through without a fracture of the orbit; ſo that if you would refer this caſe to the claſs of thoſe that I have taken notice of in the ſecond place, you are at liberty to do ſo for me, eſpecially as the woman fell down dead from the wound.

Yet I do not know to which claſs thoſe belong, that have been ſaid to be kill'd from a wound of the orbit, by Bohn (*i*), by Ruyſch (*k*), Jacotius (*l*), and even Dodonæus (*m*), whoſe name being overlook'd, while this obſervation was copied into the Sepulchretum from Schenck (*n*), is improperly taken from the preceding. And I am ignorant, becauſe it is by no means certain, from the narration of thoſe authors, as it is from others, and particularly from Valſalva, how many days the wounded paſs'd without the appearance of any bad ſymptom; as, for inſtance, a ſleep, which Dodonæus mentions indeed, but does not ſay on what day it began: Bohn has only this, that the patient died on the third day after the blow: and Ruyſch ſays nothing elſe, but that, in a ſhort time after the wound was receiv'd, which, to thoſe who had the care of it, ſeem'd of very ſmall moment, death had come on. And

(*z*) Sepulchr. l. 1. S. 3. Obſ. 38.
(*a*) Ibid. l. 4. S. hac 3. Obſ. 17. §. 1.
(*b*) Sect. ead. Obſ. 5. §. 10.
(*c*) Act. N. C. Tom. 6. Obſ. 130.
(*d*) Sepulchr. Obſ. cit. 17. §. 2.
(*e*) Ibid. in Addit. ad hanc Sect. Obſ. 9.
(*f*) Obſ. cit. 17. §. 4.
(*g*) Anat. l. 3. c. 10.
(*h*) Eph. N. C. Dec. 3. A. 9. & 10. Obſ. 120.
(*i*) De Renunc. Vuln. Sect. 2. c. 1.
(*k*) Obſ. Anat. Chir. 54.
(*l*) Sepulchr. Obſ. cit. 17. §. 5.
(*m*) Medic. Obſ. c. 3.
(*n*) Obſ. Medic. l. 1. ubi de Vuln. Cerebri.

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this author, although other obſervations of the ſame kind were already extant, as you might perceive, thought this of his ſo extraordinary, that he reckon'd in the number of thoſe things, which Bidloo ſuppos'd could never happen, "a fatal wound of the orbit (*o*)."

Yet this obſervation ought not to have been omitted among the others which are added to the Sepulchretum; nor yet what Ruyſch has added to it; I mean, that the ſuperior part of the orbit is ſo thin and fragile, as, in many places, not to exceed the thickneſs of writing-paper, and to admit of a fracture from the finger alone: and, therefore, that wounds inflicted on the orbits are not to be made ſlight of, (as happen'd in many of them which I have taken notice of) eſpecially if they are inflicted with a ſword, or ſome inſtrument of a ſimilar nature, or with a piece of wood that is not blunt-pointed, or if the wounded perſons are ſeiz'd with a ſleepineſs, a nauſea, a fever, a vertigo, or a convulſion; to which you may add, from the hiſtories I have pointed out, a conſiderable pain of the head, a numbneſs of the limbs, a palſy, a delirium, or any other ſymptom of that kind.

And as this attention is ſometimes of uſe towards the cure, for inſtance, by leading us to apply the trepan to the os frontis in proper time, which another obſervation of Borelli ſhews (*p*), ſo it is, for the moſt part at leaſt, uſeful in making a prognoſis. I have ſaid for the moſt part: ſince although the others died, yet this patient of Borelli's eſcaped, and the celebrated Fantonus, in the ſcholium to his father's obſervation (*q*), which does not indeed particularly make mention of a wound of the corpus ſtriatum, but appears to be the ſame that is refer'd to above from the Sepulchretum (*r*): ſays, that he knew a ſoldier, who, being wounded with a very ſharp ſword, at the internal angle of the orbit, and having fallen into a hemiplegia and weakneſs of the eye, drag'd on his life for many years in this ſtate of health.

To this, I ſuppoſe, you will add that hunter, of whom Elias Camerarius (*s*) ſpeaks, who being wounded, with a ſharp inſtrument, in the ſame angle, and in the confines of the upper eye-lid, had a paralyſis of the whole oppoſite ſide ſucceed to that wound, an amauroſis of the neighbouring eye, and a conſiderable diminution of memory; the paralyſis, nevertheleſs, being by degrees very much alleviated afterwards, and he continuing to live, ſo that four months had already paſs'd ſince the infliction of the wound, when the obſervation was written, and almoſt nine, as it ſeems, when it was ſent to Augſburg.

Another young man, who is deſcrib'd by Nebelius (*t*), was happier than he; for being wounded thorough the left orbit, and immediately ſeiz'd with a paralyſis of the ſame ſide, and convulſive motions on the oppoſite ſide, with an aphonia, and ſoon after with a delirium and loſs of memory, had, after the third week, a little ſanies diſcharg'd from the right ear, after a great pain of that part having preceded; which diſcharge continu'd ſome days, and about ſix weeks after receiving the wound, he recover'd his health entirely. But leſt you ſhould happen to be ſurpriz'd that the hemiplegia had ſeiz'd on the ſide which lay under the wound, and that convulſions ſeiz'd on

(*o*) Reſp. ad Bibl. Vindic.
(*p*) in Schol. ad cit. § 2. Obſ. 17.
(*q*) 35.
(*r*) §. 10. Obſ. 5.
(*s*) Eph. N. C. Cent. 3. Obſ. 55.
(*t*) Earund. Cent. 6. Obſ. 54.

the oppoſite ſide, contrary to what more generally happens, as I have ſaid above (*u*); it is neceſſary you ſhould be inform'd, that the wound had been inflicted with a ſharp ſword, which "had gone through the lower eye-lid, "under the external canthus of the left eye, and had proceeded upwards "in ſuch a manner, that the point of the ſword penetrated obliquely under "the bulb of that eye, through its bony orbit, towards the anterior baſis "of the brain."

Add therefore with me, what this oblique paſſage of the ſword, and the great pain of the right ear, and the ſalutary defluxion of ſanies through the ſame ear, ſufficiently ſhow; I mean, that the ſword penetrated through the anterior baſis "of the right hemiſphere" of the brain. By this means you will readily perceive that the left ſide of the body, and not the right, was oppoſite to the injury of the brain. And you naturally conceive of yourſelf, that not only wounds inflicted on the orbits, but even below the orbits, as the hiſtory of Egermeierus (*x*) had ſhown, and this other of our Valſalva's confirms, relate ſometimes to the brain.

59. A young man, of twenty years of age, was wounded with the point of a ſharp ſword, about the lower margin of the orbit of the left eye. On being wounded he fell down: all the functions of the internal ſenſes ceas'd: he became ſpeechleſs. If you except certain convulſive motions, he ſcarcely gave any ſign of motion; nevertheleſs he ſhow'd ſome ſenſe of pain, when the probe was introduc'd into the wound. The motion of reſpiration was encreas'd every hour. At length the pulſe failing, he died about ten hours after receiving the wound.

The brain being taken out from the cranium, and the probe being introduc'd into the external orifice of the wound, it was found that the ſword had penetrated into the cavity of the cranium, almoſt by the ſide of the os ſpongioſum ſuperius; which was confirm'd by the bony fragments in that cavity, and by the ſubſtance of the cerebrum being wounded in that part. But how far the wound proceeded in the cerebrum, it was in vain to enquire with the probe, as, by reaſon of the ſoftneſs of the ſubſtance of the brain, it might as eaſily make new paſſages, as ſhow one that was already made. Taking away the dura mater therefore, and obſerving the pia, which, in the ſinciput, was turgid with blood, like an inflam'd part; and the lateral ventricles being then open'd, in both of them was ſeen coagulated blood, which had flow'd out from the veſſels that had, without doubt, been ruptur'd by the wound itſelf. And from theſe ventricles it ſeem'd to have overflow'd into the fourth; for in this cavity alſo a blood of this kind occurr'd.

60. Thus I have given you the obſervations of Valſalva, which are greatly to be commended, even on this very account, that, in all of them in general, the days and the hours are mark'd down, on which the patients were attack'd with the particular ſymptoms, or with death: circumſtances which, although very uſeful and neceſſary to be known by phyſicians and ſurgeons, are nevertheleſs wanting in moſt obſervations of the kind. As to my obſervations they bear no proportion to his in number. However, as this letter is already ſufficiently prolix, I ſhall refer you to the next for them. Farewel.

(*u*) n. 47. (*x*) Sepulchr. Sect. hac 3. Obſ. 3. § 13.

LETTER

LETTER the FIFTY-SECOND

Finiſhes the Diſcourſe on Wounds and Blows of the Head.

1. IN giving you the remaining hiſtories, which relate to the wounds and blows of the head, in this letter, I ſhall preſerve the ſame order as in the former, and begin with thoſe wherein either the injury of the cranium was very inconſiderable, or there was none at all. For although Celſus (*a*) ſays, "it rarely happens for the whole bony compages of the cranium to re-"main entire, and for ſome vein in the membrane of the brain to be ruptur'd "internally from the blow;" yet the frequent diſſection of bodies has ſince ſhown us, that ſomething of this kind, or even a more violent injury, very frequently happens without any injury of the bone. And this I have not only heard Valſalva aſſert, from the teſtimony of his own diſſections, but you yourſelf might alſo have learn'd from thoſe that are deſcrib'd among the firſt of the preceding letter. To which you may add, beſides ſo many others that you will find in turning over the Sepulchretum, theſe alſo that I ſhall immediately ſubjoin.

2. A woman, of fifty years of age, and the mother of many children, being ſomewhat fatter than country-women (in the number of whom ſhe was) for the moſt part are, fell into a ditch, and daſh'd one ſide of the ſinciput againſt a very hard piece of ice; for it was the middle of the month of December, in the year 1725. The bone which receiv'd the blow was laid bare by this ſtroke, for two or three inches. On account of this wound ſhe came into the hoſpital here: in which, without any paralyſis, without any convulſion, without any very violent ſymptom preceding; for ſhe had but juſt felt a ſlight inclination to vomit; without being weaken'd in her muſcular ſtrength, or that of her pulſe, the wound ſuddenly grew dry and livid, and the day after, which was the eleventh from her fall, ſhe died.

Her body, though the ſeaſon was extremely cold, and though I diſſected it not more than twenty-four hours after death, ſmelt ſo ſtrong, that I was oblig'd to finiſh the diſſection within the courſe of one day. Yet I remark'd many things that related both to a natural and to a diſeas'd ſtate. I ſhall, however, only give you the narration of the latter. In the belly the omentum was contracted, and the ſtomach was inclin'd obliquely too much to the right ſide. That part of the inteſtine colon, which lies under the ſto-

(*a*) De Medic. l. 8. c. 4.

mach,

mach, did not proceed tranſverſly, but was curv'd downwards; and the ſame inteſtine was very much dilated, from the beginning quite to this curvature, and livid. The ſpleen was longer than it naturally is. The teſtes were not only white, hard, and unequal, but in one of them lay hid, in the centre, a little body of a white colour, roundiſh, almoſt hollow, and cartilaginous. Both the tubes were utterly impervious at two fingers breadths below the larger orifice. The vagina was internally of a black colour, and at the lower and almoſt anterior part appear'd to be eroded, as if from an acrid humour; an eroſion of which kind was alſo obſerv'd in one ſide of the cervix uteri.

In the thorax the lungs were black on the back-part. The heart was lax, and in its ventricles were many polypous concretions. The veſſels were fill'd with a great quantity of blood, as they were in other parts of the body likewiſe.

Finally, in the head the os ſincipitis was internally and externally livid, where it had been daſh'd againſt the ice; yet had not the leaſt fiſſure. The meninges, under which not pus or blood was extravaſated, but water, were themſelves alſo livid and greeniſh, in the part where they correſponded to the livid bone. So in that place only the cerebrum alſo was affected with a lividneſs, which did not however deſcend deeper than to the extent of two inches. The putrid odour which exhal'd from theſe parts was much more violent than that of the others, though thoſe were exceedingly offenſive, as I have already ſaid.

3. The head of a man who had, in like manner, fall'n from a high place, was brought to me in the year 1722. Though the ſcull was neither fractur'd nor fiſſur'd, yet was there almoſt the ſame ſtate of the meninges, and of the brain itſelf alſo.

4. A poor woman, of a habit of body inclining to fatneſs, having become mad through grief for having loſt her huſband, ſhe herſelf being at that time very young, wander'd through the city in ſuch a manner as to hurt nobody, but to be herſelf troubled with the reproaches and injurious treatment of the rabble. Wherefore, beſides that ſhe was ſaid to have brought forth a child ſome months before, ſhe was at laſt ſtruck on the head by a profligate young fellow, with an iron pin or bolt, ſo that ſhe died about the tenth or eleventh day after the blow, not without ſymptoms of a concuſſion in the brain.

The body being brought into the college the following day, that I might therefrom finiſh the anatomical demonſtrations of the year 1728, before the end of February, it was ſcarcely poſſible to make uſe of it. For although it ſeem'd to be a very proper ſubject, when I order'd the inteſtines to be taken out; yet on the following day the greater part of the abdominal viſcera were already green. I nevertheleſs obſerv'd the following things. The whole fundus uteri was very thick: the teſtes were very much enlarg'd, and rounder than uſual in their figures: and the orifice of the tube was perfectly grown into one ſubſtance with the teſtis on one ſide. But the teſtes themſelves, when diſſected, ſhow'd nothing peculiar in their appearance, except that they contain'd a little more fluid than uſual.

In both the cavities of the thorax was water contain'd. The poſterior ſurface of the heart had already begun to be green.

But

But the head was in a more diſtemper'd ſtate than any of the other parts, as was naturally to be expected. For although the cranium was ſound, yet pus was contain'd betwixt that and the dura mater, and this membrane was moreover affected with a kind of ſphacelus.

5. That the bodies of wounded perſons very often become fœtid, green, and putrid, ſoon after death, is not to be wonder'd at, when the part which was wounded already began to abound with pus and ſanies, and ſtill more when it was ſeiz'd with a gangrene, as was the caſe here. For the deprav'd and corrupted particles enter the blood through the ruptur'd venous or lymphatic veſſels, and, with this fluid, are carried through the whole body. And that this takes place in wounds of the head alſo, I have ſeen more than once, eſpecially in an old woman, whom I have taken notice of when I was writing to you on the ſubject of barrenneſs (*b*). For in that ſeaſon which was ſo very cold, when the viſcera of the belly were taken out, the ſeptum tranſverſum itſelf was ſoon after of a green colour.

But theſe things happen more readily in the carcaſes of thoſe who, either in other parts, as in the aorta of that old woman, or in the humours themſelves only, were diſpos'd to putrefaction before the wound was receiv'd. And in the number of theſe, beſides a man who was wounded in the orbit of the eye, of whom I wrote in the preceding letter (*c*), you will recount that country-woman, whoſe diſſection I related to you juſt now (*d*); for an injury of that kind in the head did not ſufficiently account for ſo great a ſtate of putrefaction: although why this may ſometimes ſeem to be, in part, leſs than it was before, may not only be gather'd from what has been juſt now ſaid, but will be more clearly pointed out below (*e*).

6. A woman of the ſame age, but many years before, that is in the year 1706, had two wounds inflicted upon her head with a ſhort and cutting inſtrument, which however was not very heavy; with one of theſe wounds that part of the right temporal muſcle was injur'd, which lies behind the angular apophyſis of the zygomatic bone, to uſe the words of the celebrated Winſlow; the other was ſomewhat lower. Yet both the wounds were brought almoſt to a cicatrix, when the woman, expoſing herſelf to the injuries of the cold air, and agitating the temporal muſcle by the maſtication of hard food, ſwell'd very much, ſoon after, in her whole face, and was ſhaken with rigors, and convulſive motions in her head: ſhe was now and then alſo ſeiz'd with a ſlight delirium, till having a ſtertor come upon her, ſhe died in the hoſpital of St. Mary de Morte at Bologna.

As I diſſected not only her head on the following day, which was the twenty-ſixth of March; but the other part of this woman alſo, I firſt obſerv'd the following appearances in the genitals, that were preternatural. In one of the teſtes was a ſmall cyſt of a yellow colour, inclining to green, wherein was a globule, as if of concreted blood, which had I know not what of a bright red appearance in the center. The uterus had its parietes much thicken'd, the internal coat being lax, under which were ſeen through its ſubſtance, in ſome places, bloody drops, perhaps becauſe the menſtrual flux had been coming on: or, probably, rather becauſe the uterus was diſeas'd. For a

(*b*) Epiſt 46. n. 26. (*c*) n. 57. (*d*) n. 2. (*e*) n. 9.

white and pretty fluid matter occur'd betwixt the valves of the cervix, as if the woman had labour'd under a uterine fluor: and, indeed, the *oſculum uteri* was more lax than the ſubjected vagina and its orifice requir'd, and, at the ſame time, ſomewhat injur'd on its ſurface, as if from acrid matter.

The ſkull being open'd, we found the dura mater to be thicken'd and red here and there, as if from drops of blood, which, however, you could not wipe off; and this in more than one place, where it is ſubjected to the baſis of the cerebrum; as, for inſtance, at the ſides of the ſella turcica, and under the glandula pituitaria itſelf, but no where more than under the right anterior lobe of the cerebrum. Under which, and at the external ſide of the ſame lobe alſo, betwixt both the meninges, was a pus of a yellowiſh colour inclining to cineritious. Yet the ſubſtance of the cerebrum, and the other parts that were within the cranium, were unhurt; although the ſanguiferous veſſels, which run through the pia mater, appear'd to be ſomewhat more turgid than uſual; and under this membrane was a ſmall quantity of water, as there was a ſmall quantity alſo, and of a reddiſh colour, in the lateral ventricles of the brain, and a polypous concretion in the ſuperior ſinus of the falx.

As we diligently enquir'd after the paſſage by which pus could enter the cranium from the wound, we found that all the bones which compos'd this cavity were quite free from injury on their internal ſurface. And then we paſs'd on to examine the external parts. Under the upper wound; for the inferior, being leſs deep, had a different direction; there was a cavity about which, and in which, pus ſtagnated: and through this cavity a certain ſurgeon ſaid that he introduc'd a probe into the cavity of the cranium, while the woman was living. And, indeed, there was a paſſage through the bone, perforated by the wound, for the pus to be carried from this cavity, not into the cranium however, but into the orbit of the eye: and by this ſlight difference the ſurgeon had been deceiv'd. But by what paſſage it was carried from the orbit, where pus was alſo found, into the cranium, there was not the leaſt teſtimony to evince; whether we inſpected the natural foramina, or examin'd into thoſe which had happen'd to be open'd by the force of diſeaſe; eſpecially as the dura mater was ſeen to be no-where eroded. And that animadverſion had this uſe alſo; I mean, to prevent us from ſuppoſing that pus had paſs'd through a certain very ſmall chink which, we, at length, thought we diſcover'd, after raiſing up the arch of the orbit, by driving the chiſſel thereinto.

7. However, in reſearches of this kind, whether they are made in the living or in the dead body, as it is neceſſary to take care in the former, leſt, where two natural cavities are disjoin'd by a thin ſeptum, we too haſtily ſuppoſe, that the probe which reaches into one has enter'd into the other; ſo it is proper, in the latter, to abſtain from the uſe of the mallet and chiſſel, leſt, if any chink ſhould happen to appear, there may be a doubt whether it ſhould be aſcrib'd to our violence, or to the blow that had been receiv'd: as there certainly was no fiſſure, from either cauſe, in him whom I diſſected a few days after in the ſame place.

8. There was an old man of a luſty habit of body, and of a yellow colour of ſkin, who had been before under medical courſes, as an aſthmatic patient.

This man having fall'n from on high, and daſh'd the right ſide of his head againſt a ſtone; the cure of the wound which he had got by the fall, ſeem'd to go on very well, when, about the eleventh day, a difficulty of breathing came on, with a ſtertor. He had no pain in the thorax. But rather complain'd continually of a kind of troubleſome ſenſation below the right hypochondrium. And applying our hands to this place, we perceiv'd a bubble, as it were, like one of thoſe which the rain excites on the ſurface of water; and this rais'd itſelf up and ſubſided alternately and inſtantly, ſoon after returning and going away, and always keeping the ſame ſituation.

In the mean while, the head ſeem'd to be very well; but the man could not ſleep, and convulſive ſtartings of the tendons occurr'd at the wriſts to thoſe who felt the pulſe. And this, which had always been frequent, was now alſo become ſmall. Wherefore, within a day or two after the difficulty of reſpiration came on, death freed the patient from his diſorders.

The abdomen of the carcaſe was diſtended: and when this cavity was open'd, the ſtomach and the inteſtines appear'd to be diſtended with air, the ſmall inteſtines being inflam'd in a certain place, and not without ſome fœtor. The liver was ſomewhat hard. The ſpleen was ſo lax, that it could be torn to pieces very eaſily by the fingers. The herniæ, and the lacerated flap, as it were, which hung from the ring of the pylorus, in conſequence of their being ſufficiently deſcrib'd already (*f*), and the eleven ribs on each ſide alſo, which I have taken notice of in the Adverſaria (*g*), I paſs by here, as it is ſufficient to hint that this is the man in whom theſe appearances were found. And as to the lower part of one of the lobes of the thyroid gland containing a pretty large globular body, and two others, in like manner, that were full of a ropy humour; I paſs over theſe circumſtances for this reaſon, becauſe I have often taken notice of things of that kind in other bodies.

It will not be improper to add what appear'd in the thorax. The anterior ſurface of the lungs was connected by membranes to the cheſt. The lungs themſelves were no-where hard; yet, although neither the legs nor the feet had been ſwell'd, both lobes were ſurrounded with a great quantity of water; the left with that which was of a red colour, and rather ſmall in quantity; and the right with ſomewhat more, and that which was of a green and yelloviſh colour. On the right ſide, alſo, the pleura was putrid; ſo that it was not only very eaſy to ſeparate it, but pieces thereof had been ſpontaneouſly ſeparated, and ſwam in that water; and adhering to the membrane of the lungs, which was itſelf ſound, belied the appearance of pus. The pericardium contain'd a reddiſh water; and the heart a frothy blood: the great artery, at its origin from the heart, had within it a polypous concretion.

The bone of the wounded ſinciput lay open to the extent of half an inch, being of a livid colour, and comprehended in a kind of circular little furrow, as if the exterior lamina of the cranium had ſubſided. And the internal ſurface correſponding to it was of the ſame colour indeed, but comprehended in no little furrow. Nor, indeed, had the ſkull any other diſorder beſides, either there, or in any other part. But the dura mater, which lay under

(*f*) Epiſt. 43. n. 31. & Epiſt. 29. n. 17. (*g*) II. Animad. 32. in fin.

that one place, was moiſt with a thickiſh ichor on its ſuperior ſurface; and had adhering to its inferior ſurface, yet in ſuch a manner that it could be taken away without any difficulty, a piece of another dura mater, as it were, which, when attentively examin'd, was found to be very ſimilar to thoſe ſpurious membranes wherewith the lungs and the pleura are frequently cover'd over, in inflammations of the thorax. Under this piece adher'd to the pia mater a kind of pretty large drop of thick and whitiſh ichor. And betwixt this membrane and the brain, not there only, but in ſeveral places, a ſmall quantity of water was interpos'd. And this water was not wanting in the lateral ventricles, in which cavities it was of a reddiſh colour. However, all the ſubſtance of the cerebrum was every where ſound: the cerebellum was very ſoft. And, finally, all the muſcles of the body were flaccid.

9. As to the ſenſation of bubbles, as it were, riſing up and ſubſiding, which was troubleſome, indeed, but eaſily to be referr'd to flatulent habits, in which one certain part of the inteſtines is rais'd up, and not any other; if you, in concert with me, omit this ſymptom, and conſider the others, you will, without doubt, add this obſervation alſo to the four which are already deſcrib'd, and to many others given, from Valſalva, in the preceding letter; from which it is underſtood, that, although the bone is not perforated by any fiſſure, ſome part may be injur'd within the cranium by the force of the percuſſion: and of this injury death may be the conſequence.

For as to the preternatural appearances which were found in the thorax of this old man, perhaps, they alſo add their origin or increaſe from thoſe that were within the ſkull; ſome part of the deprav'd ichor being carried from thence into the thorax, eſpecially as the man was ſubject to an aſthma. And I even remember, that a woman who died of a blow on the forehead, had, contrary to expectation, a dirty-colour'd water in both cavities of the thorax: the hiſtory of which woman I ſhall ſend to you hereafter, among thoſe that relate to the ſubject of lameneſs (*b*).

This ſuſpicion has a colour given to it by the circumſtance which I have remark'd in the obſervation of Valſalva, and others, about the tranſlation of deprav'd matter from an injur'd cranium into the thorax, which is by no means rare (*i*). And although we know that where the queſtion is of the meninges and brain, we are wont to attend no leſs to the acrimony, than to the quantity, of the injurious humour; yet it is not quite incongruous to ſuſpect, or at leaſt ſometimes, that where a very little quantity of this is found within the ſkull of dead bodies, it is the remainder of a ſomewhat larger quantity, which, after having injur'd thoſe parts, even more than is apparent, has been preſently carried through the veſſels into other parts, or diſpers'd through the whole body; from whence we have alſo accounted for, in part, the ſigns of univerſal putrefaction, and the very putrid odour in particular (*k*). And how little mortal ichor, or diſorder brought on by it, frequently remains within the cranium, or, at leaſt, is found within the cranium, beſides many hiſtories of Valſalva (*l*), and the two firſt of ours, and this laſt, theſe others, which our very diligent Mediavia communicated to me, will ſhow you.

(*b*) Epiſt. 56. n. 26.
(*i*) Epiſt. præced. 51. n. 17. & ſeqq.
(*k*) Supra, n 5.
(*l*) Epiſt. præced.

10. An

10. An old man was ſtruck with a ſtone on one ſide of the ſinciput, when he was drunk, and had a wound inflicted thereby: yet he neither fell down, nor vomited, in conſequence thereof. The wound being dilated, ſome days after, by the ſurgeon, the bone beneath was found to be ſomewhat livid, not very far from the angle which is intercepted by the ſagittal and lambdoid ſutures; for which reaſon it was ſcrap'd with an inſtrument proper for that purpoſe. Nor was the phyſician wanting in making uſe of every thing which it is cuſtomary in theſe caſes to make uſe of. But the wound was almoſt dry, and not of a good colour: a fever attended it: the pulſe was weak: the patient roſe up out of bed in the night, complaining of the violence of the heat; and, indeed, it was the month of June, in the year 1739; but this ſeem'd to be done with ſome degree of delirium.

At length, the fever went away; the pulſe became better; and now the patient declar'd that he could bear to abſtain from food no longer. However, he was guilty of no irregularity, although the fever return'd after ſome days, with a ſenſe of heavineſs in the head, with a kind of torpor of the ſenſes, a ſlight delirium, and a redneſs of the face and eyes. The phyſician, therefore, endeavour'd once more to alleviate the ſymptoms, but to no purpoſe; and in a ſhort time after, the old man died; that is, about the twentieth day after receiving the blow.

The cranium was very thick; and the dura mater thick in proportion. In the former was no-where any mark of diſorder; becauſe, even in that part where it had been ſcrap'd, it was of a natural colour both internally and externally. The dura mater was likewiſe ſound. But not ſo the pia mater, to the external ſurface of which, where it correſponded with the place of percuſſion, a little mucus adher'd; which was of a yellow colour inclining to green, and of a very filthy odour. That part of the cerebrum which lay beneath this mucus, began to become blackiſh, for as large a ſpace as two fingers breadths would cover, in every direction; yet not to a greater depth than that of the cortical ſubſtance of the brain. However, the other parts were in a ſound and proper ſtate, except that a conſiderable quantity of reddiſh ſerum was found in the lateral ventricles, but more in that which lay under the wound. In both of theſe cavities the plexus choroides were of a pale colour.

11. A woman, who had been for a long time ſubject to an epileptic diſorder, receiv'd a blow upon her head. In the beginning there was no ſymptom worth attention; ſo that, if ſhe were aſk'd about her complaints, ſhe anſwer'd that they were all very ſlight, or none at all. But at the end of ſome days, the ſymptoms began to ſhow themſelves, and to increaſe; the fever was augmented; and a certain ſtate of inactivity, which was very much like a conſtant ſleep, came on, though without ſleep; for if you attended to it, you heard her murmuring with a low and ſmall voice. And in this manner, neither the firſt remedies, nor the latter, being of any advantage, ſhe died.

The ſkull not only ſhow'd no fiſſure, but had ſcarcely any change of colour, in the part where the blow had been receiv'd. Only under that place was a purulent mucus, as we have ſaid in the old man, though in a rather larger quantity. Beſides, from the internal ſurface of the cranium, where

it hung over the falciform ſinus, ſtood forth a bony prominence, which was ſmall indeed, and ſhort; but of ſuch a kind, that if you drew your finger over from the poſterior part forwards, your finger was prick'd thereby. But this probably related to the epilepſy; to the blow it certainly did not relate.

12. And Mediavia related that, in the ſame year 1739, it had happen'd, almoſt in the ſame manner, to ſome as to the old man, to others as to the woman, from blows of the head; and he had obſerv'd, if at any time the violent ſymptoms of diſorder which had been in the beginning, were almoſt obliterated, and after that the fever, from a ſlight one, ſuddenly became violent, beginning with a coldneſs and perturbation of mind; if this came on in the eleventh day, that death follow'd on the fourteenth; but if the exacerbation of fever came on in the fourteenth day, that death came on in the ſeventeenth.

In reading theſe obſervations, and ſtill more in reading the great number left us by Valſalva (*m*), I do not doubt but you are, and have been, much ſurpriz'd that no mention is made of the cranium being perforated by the trepan; eſpecially in thoſe cities wherein very eminent profeſſors of the chirurgical art have flouriſh'd, who were accuſtom'd formerly, as we learn even from their writings, to afford this aſſiſtance with the greateſt readineſs to thoſe who were wounded in the head.

Yet you will ceaſe to wonder, when you conſider the different fortune of ſo many remedies in different ages, and not only in different nations and climates, but in the ſame; and eſpecially thoſe remedies which are of a cruel nature, and at the ſame time of an uncertain event, as this is. The ſurgeons did not want readineſs, dexterity, or courage: but courage was rather wanting to the patients, or their relations, or others who were concern'd; as they conſider'd, on one hand, an operation which was cruel in its appearance, and, on the other, the event, which was often ſo unhappy, that to the common-people, and perſons ignorant of the medical art, thoſe patients who died might ſeem to have been kill'd by the method which was us'd in order to ſave them: which conſideration, I ſuppoſe, led them to with-hold their conſent from the operation. And ſo many, ſo various, and ſo difficult to conjecture, are the cauſes for which the perforation of the cranium, although ſkilfully and innocently perform'd, may, nevertheleſs, become uſeleſs; that it might eaſily happen, among many who were trepann'd in thoſe years, that very few only eſcap'd.

Nor would I have you wonder, that I ſaid it might ſo happen, ſince Tronus teſtifies, in the work of Bohn (*n*), that in the hoſpital of a large city in Italy, all who were wounded in the head, and underwent the operation of trepanning, actually "periſhed," not one excepted. And what will you ſay to this? that in a hoſpital, in a foreign nation, which is much larger, not before the end of the ſixteenth century, but in this our age, not under any raſh operator, but under the moſt experienced ſurgeons, the ſame, or almoſt the ſame thing happens, as has been committed to writing;

(*m*) Epiſt. 51. (*n*) Diſſert. de Trepanat. Difficult..

and

and in neither place can we lay all the blame upon the air, although infected with unwholeſome effluvia of a great number of ſick perſons; ſince it is certain, that, in both of them, wounds of the head, even when conſiderable, have been cur'd by being treated in a different method, and are ſtill cur'd.

Take care how you ſuppoſe, that I here wiſh for greater diligence, or ſkill, in theſe very celebrated men. There are cauſes enough for us to accuſe, as I had begun to ſay. Thus ſuppoſe, for inſtance, that blood is ſometimes extravaſated within the ventricles of the brain, or under the baſis of it; at other times it may be extravaſated externally indeed, and at the upper-part, but under the dura mater; or if above this, yet in a place directly oppoſite to which the ſurgeon dare not trepan; for inſtance, under the muſcles of the temples, or oppoſite to the pituitary ſinuſſes of the forehead.

Nor will you interrupt me by replying, that the cranium may ſometimes be perforated, even oppoſite to the ſeat of theſe ſinuſſes, and under thoſe muſcles; and the dura mater be cut into above that blood. For I know, that the frontal ſinuſſes are wanting in ſome perſons, which I think I have ſometimes obſerv'd, where the lower part of the forehead was not at all prominent about the eye-brows, but flat. Nor does it eſcape me, that, in order to draw out the matter which is confin'd under that membrane, the inciſion thereof has been propos'd by the moſt excellent ſurgeons; among whom our country-men, Gabriel Falloppius (*o*), Cæſar Magatus (*p*), Peter de Marchettis (*q*), were not the laſt; nor that the temporal muſcle has been "cut many times with ſucceſs," by the ſame Magatus (*r*); nor that, before Magatus, five ſucceſsful inſtances of the ſame muſcle being cut, were, in like manner, publiſh'd by Carcanus (*s*); no convulſion being the conſequence, even when the whole of it was cut through tranſverſly: and I myſelf ſaw here, in the year 1734, a young man, who, having had a dagger forc'd through that muſcle, from the upper and anterior part of it, quite into the concha of the external ear, behind the tragus, was troubled with a great hæmorrhage indeed, but with no fever, much leſs with any convulſion, and recover'd very happily.

I know then, that theſe things were propos'd, or done, by the Italians, others being even at that time afraid of them. But, at the ſame time, I know, that theſe things were done in conſequence of the moſt extreme neceſſity, and not without very great danger, which they themſelves do not diſſemble, and particularly of convulſions, which not Hippocrates (*t*) only, but even Marchetti (*u*) himſelf, ſaw to be the conſequence thereof; ſo that, for this very reaſon, he would not recommend the cutting of this muſcle; not to ſay that he has expreſly ſaid, it ought "never" to be undertaken.

Whether, therefore, the ſurgeons, at that time in which the perforation of the cranium began to be not well ſpoken of in ſome cities, perform'd this operation in any very ſafe place, and as far as they ſuppos'd it to be

(*o*) Comm. in Hipp. de Vuln. Cap. c. 43.
(*p*) De rara Medic. Vuln. l. 2. c. 38.
(*q*) Syllog. Obſ. Med. Chir. 14.
(*r*) l. 2. cit. c. 27.
(*s*) De Vuln. Cap. Serm. 1. Lect. 8.
(*t*) in Coac. juxta Dureti interpret. l. 3. tr. 2. c. 1. n 1.
(*u*) Syllog. cit. in addit. ad Obſ. 15.

proper,

proper, not daring to imitate the above-mention'd authors in the other proceedings, and the patients nevertheleſs periſh'd; or whether they did dare to imitate them; and convulſions, ſuppoſe, or other evils following the imitation, the patients periſh'd in ſo much a more miſerable manner (for our enquiry is, not what neceſſarily happen'd, but what might happen, in order to make a remedy of this kind become deſerted); you ſee into what fear the people might have been thrown, and how naturally their opinion might, from either of the events, become averſe to the practice.

13. But beſides thoſe reaſons that have been mention'd, it might happen for many others, that the perforation of the cranium, at that time, might be perform'd without any utility, and even not without manifeſt detriment; which is a circumſtance that would render the minds of the people ſtill more averſe to the remedy in queſtion: as, for inſtance, if a ſurgeon, who happen'd to be ignorant how often dents or cavities are impreſs'd upon the internal ſurface of the cranium, which cavities I have already ſpoken of to you (*x*), and which ſometimes receive ſo very deeply the tubercles, as they formerly call'd them, of the dura mater, that you will have only one, and that a very thin external lamina of the bone, remaining, eſpecially in the oſſa ſincipitis, and ſometimes in the os frontis; through the ignorance of which circumſtances, I fear, leſt ſome obſervers have conſider'd them as diſorders of the cranium, and dura mater; if he then, I ſay, had by chance borne down the trepan againſt any one of theſe cavities, for they have no certain ſituations, he would, without doubt, firſt have injur'd the dura mater, and the parts whereby it is rais'd up, before he could have ſuppos'd the whole of the firſt lamina to have been pierc'd through by him: or if another, having laid bare the ſame membrane by the trepan, and ſuppoſing pus to be confin'd under it, (for there ſometimes is pus, as we learn from many obſervations, and among theſe, from two that are publiſh'd by Murray (*y*), and confirm'd by anatomy) had cut into it; but being deceiv'd by the ſigns (amongſt which, whether "the moſt certain of all can be the "ceſſation of the pulſatile motion, impreſs'd thereon by the arteries of "the cerebrum," others muſt determine), had carried the point of the inſtrument not againſt the pus, which did not exiſt at all, but againſt the pia mater and the brain; or if not deceiv'd, had wounded the branches of the artery that creep through the dura mater.

I omit to enumerate other errors, many of which might happen in an operation that is not very eaſy and clear, and that to the great detriment of the patients: and I return to the remaining cauſes which might render this operation uſeleſs.

To take notice of ſome of theſe only; at leaſt though the blood was extravaſated betwixt the dura mater and the cranium, and in thoſe places even which nothing forbids us to perforate; yet if, being coagulated, it had adher'd ſo cloſely and tenaciouſly to that membrane, as not to be ſeparated therefrom without violence, as it has happen'd to many others, and to Valſalva himſelf, more than once, to find it; for we particularly refer to nothing, as you may even have obſerv'd above, but you have examples of almoſt every circum-

(*x*) Epiſt. 8. n. 3. (*y*) Quæſt. Pariſ. A. 1736. propoſita n. 5.

ſtance,

ſtance in the preceding or in the preſent letter; of what advantage would it have been to perforate the cranium?

You will perhaps ſay: But if it had adher'd in this manner, even before death, a ſkilful ſurgeon would have been able to apply ſuch things as might diſſolve, and ſet it looſe. Let us ſuppoſe it. Yet what if ſome part of the coagulated blood lay in ſuch a place as the infus'd fluid could have no acceſs to; for you are not ignorant that this membrane adheres very cloſely to the cranium; and that it follows from hence, that one place, wherein it is ſeparated from the cranium, cannot communicate with another, though very near, in which it is likewiſe ſeparated, or at leaſt ſo expeditiouſly, as would be neceſſary for it both to enter and to be diſcharg'd.

Nor am I ignorant by what inſtruments ſurgeons can ſeparate ſome neighbouring part of the dura mater from the ſcull; and that the patient, by holding his breath at intervals, may urge the cohering matter, and procure it a more eaſy diſcharge from its receſſes.

But, on the other hand, I alſo ſee the danger, leſt, by tearing away the dura mater, the ſurgeon ſhould hurt this membrane; or leſt ſome veſſel of theſe pretty large ones which I have before mention'd, ſhould be injur'd thereby; as you know very well that they are prominent through the external ſurface of this membrane, and are receiv'd within thoſe ramifying furrows of the ſcull: and indeed I am not without fear of thoſe exertions in the patient, if he can really hear, and do what is commanded him, and does not lie in an apoplectic ſtate, without ſenſe or motion.

For when reſpiration is reſtrain'd, and men exert themſelves in this ſtate, it is evident that a greater quantity of blood is retain'd in the head, even by obſerving their faces, which are at that time tumid and red; either becauſe the return of the blood is then leſs eaſy on all ſides, in conſequence of the lungs being at reſt, or even for that reaſon which Santorini (z) ſuppos'd, or for ſome other cauſe of that kind peculiar to the head. Wherefore the veſſels of the brain being turgid, the pia mater is every where forc'd againſt the dura; and if there happens to be any fluid betwixt this and the cranium, that is ſqueez'd out through the foramen which is open'd in the cranium, where there is the leaſt reſiſtance, if the progreſs of it this way be not wholly obſtructed. But even the diſtenſion of the veſſels, in general, may give riſe to a freſh eruption of blood through the injur'd veſſels; and the too violent and too frequently-repeated compreſſion of the dura mater, may occaſion an inflammation therein. And you ſee that neither of theſe circumſtances can contribute much to the recovery of the patient.

Beſides, there is ſometimes blood in a fluxile ſtate, ſo that it might eſcape at this foramen; but it is in ſuch a quantity, that before it can be taken out, it muſt have preſs'd upon the brain, in ſuch a manner as to kill the patient; an example almoſt ſimilar to which you have in one of our *Epiſtolæ Anatomicæ* (a). Add to this, that it might already have brought, by its corruption, a fatal diſorder upon the meninges.

Moreover, ſuppoſe every thing that I have ſaid of blood to be ſaid of pus alſo, or, if you pleaſe, of ſanies and ichor.

(z) Obſ. Anat. c. 3. in fin. (a) XIII. n. 16.

And

And what if there be none of theſe circumſtances, but the concuſſion of the cerebrum is ſo great as to have conſiderably deſtroy'd its internal ſtructure? Read over again, I beg of you, the obſervation taken from the man who died of a violent blow on his head, which I have deſcrib'd to you in the eighth letter (*b*), and compare it with that of the criminal which I then took notice of from Littre (*c*), and to which, when ſpoken of in the preceding letter (*d*), we added another of Hænelius. In none of thoſe three was blood extravaſated; yet the two firſt died immediately after the blow receiv'd, and the third within twelve hours. Suppoſe that any one of them, in conſequence of the concuſſion being ſomewhat leſs, could have liv'd ſome little time, and that the cranium had been perforated, as if the brain were compreſs'd from an internal extravaſation of blood; could the blood have been diſcharg'd which never was extravaſated?

And to this ſuppoſition relate thoſe words of Ballonius (*e*): "Sometimes "the brain ſuffers an internal concuſſion when the cranium is unhurt, and "the fleſh only ſlightly contus'd:" and a little lower, "It has been obſerv'd, "by experience, that innumerable perſons have died of diſorders of the "brain, after convulſions and concuſſions; in the brain of whom nothing "could be found, by means of diſſection, that might ſeem to have been "the cauſe of ſo terrible ſymptoms. And this has deceiv'd moſt perſons, "who have ſuppos'd that they could find ſomething worthy of attention in "the brain of thoſe who died, after having labour'd under theſe diſorders. "So occult frequently is the cauſe of convulſion." There is, on the other hand, when there is a great and conſpicuous injury in the brain, or a great quantity of blood extravaſated within the cranium: and yet when this is perforated, none can be drawn out from the brain, or the blood is diſcharg'd to no purpoſe.

See an inſtance of the firſt caſe, in the obſervation of Elias Camerarius (*f*), who relates that the cranium was perforated in vain for this reaſon, that a ſuppuration, which had follow'd the blow of the head, lay hid within the brain, which was every where ſound and entire externally. And examples of the ſecond caſe you may draw from the obſervations of thoſe who have found the ſanguiferous veſſels, and the arteries in particular, ruptur'd within the ſcull after concuſſion. It is ſufficient for you to turn to Bohn (*g*), who ſaw it three times. Suppoſe that the arteries either were not in the number of the largeſt, or were not altogether ruptur'd; for in this caſe there would not be time to apply the trepan. Yet of what effect would it be to perforate the cranium, in order to draw out the extravaſated blood, if ſtill freſh and freſh extravaſations were made, and added to the firſt, by the arteries, though of the ſmaller ſize, which were not altogether ruptur'd? I omit other cauſes, even thoſe which are not to be imputed ſo much to the careleſſneſs and errors of the ſurgeons, as of the patients and thoſe who are about them, which are not always known to the common people; and I go on to that from which I ſuppoſe it has more frequently happen'd, than from others, that the perforation of the cranium might, to the populace, ſeem of no effect.

(*b*) n. 15. (*c*) n. 18. (*f*) Act. N. C. Tom. 2. Obſ. 149.
(*d*) n. 10. (*e*) l. de Convulſione. (*g*) De Renunc. Vuln. S. 2. c. 1.

14. For although there are ſigns from which we may ſuſpect that blood is effus'd within the ſcull; who can, for a certainty, ſay, whether there is really ſuch an extravaſation; and if he knew this, how could he know in what part the extravaſation was made, and conſequently where the bone ought to be pierc'd through? It very often happens that nobody is preſent when a man falls from a conſiderable height, or when he is ſtruck by an enemy; and he himſelf frequently cannot ſpeak: and ſometimes many places appear to have been ſtruck, and ſometimes none; and in thoſe many places, when examin'd by the eyes and the hands, even after applying emollient plaiſters and reſolvent facculi, ſome redneſs, tumour, or ſoftneſs, can but juſt be perceiv'd. And indeed Rouhault (*b*) has ſeen that a ſpontaneous tumour ſometimes appears in the part of the head which had not been ſtruck; and has even ſhown in what manner it might happen.

Nor are the other ſigns, which have been propos'd by the ancient or the modern phyſicians, of ſufficient avail; as, for inſtance, if the patient who can neither ſpeak nor underſtand, apply his hand now and then to a certain part of his head; or the phyſicians, by chance, obſerving one ſide of the body to be paralytic, conjecture the injury to have been in the oppoſite ſide of the head. For beſides one place, which perhaps gives greater pain externally, there may be other places, under which the greater internal diſorder may really lie hid; nor is it neceſſary that ſome paralyſis ſhould be always the conſequence of this; or if it is the conſequence, we do not, of courſe, know the part of the ſide which is principally diſeas'd, becauſe we know the affected ſide.

Yet this it would be neceſſary to know, in order to make the foramen, which is to be open'd, correſpond to the diſeas'd part; and to convince every one that this opening was not made in vain. But how deceitful our conjectures on this ſubject frequently are, appears even from hence, that although the very part which was ſtruck be pointed out by the patient, and even evidently ſhow itſelf by an ecchymoſis and tumour; yet caſes frequently happen, wherein one part is contus'd, and yet another has the extravaſation made in it. And this you will underſtand, not only from ſome of the obſervations deſcrib'd in the former letter, and others; but in particular from this which I ſhall immediately ſubjoin, and which, being communicated to me by our Mediavia, deſerves the more to be tranſcrib'd here, becauſe, in the caſe of which it gives the hiſtory, the cranium was perforated.

15. A robuſt country-lad, having fall'n from a high place, had hurt his head. Not the leaſt bad ſymptom was obſerv'd to be the conſequence, either then, or ſoon after, on the following days. He therefore continu'd, for the ſpace of three days, to live as uſual, and to follow the buſineſſes of life in the country, according to cuſtom. After this, an evident tumour appear'd in the place which had been hurt; which was about the part of one of the bones of the ſinciput, that is neareſt to the lambdoid ſuture; and a fever being added thereto, he was compell'd to come into the hoſpital.

Being plied by the phyſician and ſurgeon with every remedy their art could

(*b*) Traité des playes de tête ch. 10.

ſupply, he now ſeem'd to be almoſt recover'd; eſpecially as, through the whole of that time, no peculiar ſymptom of a latent diſorder had diſcover'd itſelf. About the ſeventeenth day from his fall, when he could bear hunger on longer, he was preſumptuous enough to eat very plentifully. Preſently the fever return'd in a more violent manner, with a pain which oppreſs'd the whole head, and a vomiting. Yet even then did he not confeſs his irregularity, which he had been guilty of privily to every body.

When other remedies had been tried in vain, mention was made of one which every body here refuſes, but he himſelf did not at all fear. In the place, therefore, where it was certain that the head had receiv'd a blow, the bone, which ſhow'd no diſorder at all, was perforated by a bold and eminent ſurgeon, with ſuch diligence and art, that the perforation could do no harm, if it were of no advantage. Nothing was diſcharg'd then, or afterwards. The dura mater appear'd to be very ſound, and was preſerv'd ſo. And in the mean while the patient ſeem'd to be a little better: nor did he any longer conceal the previous irregularity of his conduct; when, of a ſudden, he was ſeiz'd with a pleuriſy, at the lower and left part of the thorax; and no remedies being of ſervice to him, he died within a few days, although he had even thrown up a kind of matter from his lungs, which was ſomewhat tinctur'd with blood, but not a great quantity; and no ſymptom of the head being affected had come on, beſides thoſe which I have already mention'd.

The carcaſe, from the mouth of which a filthy matter was diſcharg'd, was livid below the throat, on the left ſide only, and that to a ſmall extent merely; but was ſo exceedingly putrid and ill-ſmelling, that even in this very cold ſeaſon, for it was the beginning of January, in the year 1742, it could not be borne. No part therefore, except the cranium, which was very thick, was open'd. Yet in the cranium was found not the leaſt mark of diſeaſe; nor yet in any of its contents, if you except a very little yellow kind of jelly, which was found to be extended, in every direction, under the dura mater, for the ſpace of three or four inches; not under the contus'd part of the head, where the trepan had been applied, but more to the forepart.

16. If you compare this hiſtory with thoſe animadverſions which I made above (*i*), you will readily ſuſpect the cauſe from whence a pleuriſy had ariſen in this young man; and that the very ſmall quantity of matter which was found under the dura mater, was the remains of ſome which had exiſted there in much larger quantity, the other part of it having been tranſlated into the thorax in particular, and into the whole body in general; as the univerſal ſtate of putrefaction ſhow'd. And if this was the juſt idea of the caſe, it were to be wiſh'd, that before the matter could have been carried to theſe parts, it might have been extracted by a perforation of the cranium.

Yet who could poſſibly know that it was neceſſary to perforate the cranium, not under the contus'd part, but more anteriorly, where there was no peculiar mark of matter being collected? But even ſuppoſe this could have been divin'd; tell me, I beg of you, at what time the cranium ſhould have

(*i*) n. 9. & 10.

been

been perforated? Should it have been done before the ſeventeenth day? Yet there was no ſign of any fluid being extravaſated. Should it have been done as ſoon as any bad ſymptoms appear'd? Although the moſt experienc'd ſurgeon Carcanus (*k*) has expreſly inculcated, "that when the bad ſymptoms "appear," not in the firſt days, but "in proceſs of time," when "they "are wont to proceed from a corruption which is already made, or which "is beginning to come on, we can very ſeldom have any hope of an infirm "conſtitution; nay, that the fate of it is almoſt always determin'd;" yet they would not be backward to make uſe of this doubtful remedy, in the caſe of a patient, who, by way of a rare inſtance in this country, choſe to undergo it; ſince Carcanus himſelf did not deny, that a perſon might be ſav'd; and even did not conceal the teſtimony of Falloppius, who affirms, that one man was preſerv'd by him, in conſequence of the cranium being perforated, about the thirtieth or fortieth day, and the ſanies being diſcharg'd therefrom; though Carcanus was not very forward to give credit to it, and would, certainly, with more difficulty have given his credit, if other rare, but not leſs certain, obſervations of this kind had been publiſh'd; and in particular, of Scultetus (*l*), who, "after the twenty-eighth week from "the injury's being receiv'd," affirm'd, that he had done the ſame thing as Falloppius, naming the man, and pointing out the time and place wherein the caſe happen'd. In this young man, therefore, all that could be done, was done. But that cauſe, on account of which I have propos'd this hiſtory, prevented a happy ſucceſs attending the endeavours that were made uſe of.

17. And I wiſh this were the only hiſtory of the kind, and that others, very ſimilar to this, were not extant among different authors, which moreover, together with many others, that, for ſeveral reaſons, likewiſe ſhow the uſe of the trepan to be of no advantage, and that, very frequently, have induc'd eminent phyſicians, both ancient and modern, to aſſert not only that this operation was "often of no effect," but even that it was very frequently of no advantage.

The minds of practitioners, however, and of the people in general, have been much more terrified by thoſe who formerly, and even in our times, have aſſerted, that there was "a conſiderable danger" therefrom; or that "the "danger was more certain;" and that trepanning "could not be made uſe "of without very great danger." Will you then aſk, whether it could be dangerous, when made uſe of by an excellent ſurgeon? Without doubt, it is to be ſuppos'd, that the phyſicians who were ſent for to Ptolemy, that king of Egypt who was "violently wounded on the head," and of whom mention is made in the epitome (*m*) of Titus Livy, were not wanting in eminence or ſkill. Yet the king "expir'd in the midſt of the operation, "while the phyſicians endeavour'd to pierce through the bones."

And who does not know how excellent a phyſician and ſurgeon Falloppius was? yet he, with ſuch a ſimple confeſſion of his error as is worthy of the greateſt men, on account of a certain circumſtance obſerv'd by him,

(*k*) De Vuln. Cap. Serm. 3. Lect. 5. (*l*) Obſ. 13. (*m*) l. 52.

very late, in perforating the cranium, has ſaid the following things (*n*): "Obſerve, I beſeech you; I have been the occaſion of death, in ſome mea- "ſure, to a hundred men, being ignorant of this cauſe." And theſe ſeveral things that I have mention'd, neither could then, nor can now, be conceal'd: as they have been ſaid in ſo many books of ſo many writers, of different ages and countries.

There is no occaſion, therefore, to wonder that the people of this country began to refuſe the aſſiſtance of this remedy, being deterr'd from it by experiments of its being uſeleſs in particular, or injurious; and this not only in one or two cities, but in moſt of the cities of Italy; and, beſides our countrymen, by others alſo, amongſt whom Wepfer (*o*) hints, that his countrymen were, at a time when the uſe of the trepan even flouriſh'd among us: his words are, "The Italians, and other inhabitants of the more "warm regions, would have determin'd to make uſe of the trepan imme- "diately; and the very experienc'd D. D. Burgouverus would have done "the ſame thing, if the patient, and thoſe who were about him, had not "entertain'd a dreadful idea of a remedy which they were unus'd to in "theſe places, and which is terrible to moſt perſons, even by its name "alone; and had not, in conſequence thereof, reſiſted his endeavours."

And can you ſuppoſe, that courage was given to thoſe perſons, who refus'd to ſuffer this operation by the declaration of John Bohn, an eminent profeſſor at Leipſic, in the diſſertation which he publiſh'd, *de Trepanationis Difficultatibus?* For before he particularly explains theſe difficulties, he does not heſitate to affirm, "that this operation, certainly, is attended with "much danger; and that it is often found of no effect, or improper." As I have taken notice of the greateſt part of theſe difficulties ſufficiently above; I ſhall rather add ſomething of that one, which was taken from the laſt-produc'd obſervation; I mean, of that difficulty which very frequently occurs, in determining the time that is proper for applying the trepan. And this I have it in my power to confirm, by another example which was ſeen by me in this city.

There was a young woman, of no mean parentage, ſlender in her make, and of a weak conſtitution, but healthy, ſo as never to have had any diſorder, but very ſevere convulſions; which ſhe had been afflicted with ſome years before, in the whole of her body, though not more than once. Being, therefore, in good health, and ſitting upon a very low ſeat, it accidentally happen'd, that being ſurpriz'd with an unforeſeen thing, and a noiſe, ſhe drew her head back haſtily, as is frequently the caſe, and ſtruck one ſide of the occiput, with violence, againſt a marble ſlab, which was prominent, behind her, from the wall. It was the laſt day but one of March, in the year 1739; nor did ſhe feel any inconvenience then, nor for ſome days. After that, there was a little pain in the place which had receiv'd the blow; and to this ſucceeded, in the ſide of the neck below that part, a kind of rigidneſs of the muſcles that lie there, attended with conſiderable pain. Yet all theſe ſymptoms were ſo ſlight, that the patient did all the ſame kinds of buſineſs

(*n*) Comment. ſupra ad n. 12. cit. c. 17. (*o*) Hiſtoriar. Apopl. Auctar. in Schol. ad Hiſt. 6.

ſhe

ſhe had been us'd to do before, both at home and abroad. Who then would, at this time, have preſum'd to order the cranium to be trepan'd? or if any could have been ſo preſumptuous; do you think, that others would have permitted it, or that a delicate woman would have ſuffer'd it? Now take the remainder of the hiſtory.

The woman having gone on, quite to the month of Auguſt, in the manner I have told you, that is, having felt no other inconvenience, beſides what has been taken notice of, I was ſent for to her on the ſixteenth day of the ſame month; having had, from her phyſician, the relation which I have given you: he farther added, that for ſome days paſt, the patient was feveriſh, and that to a conſiderable degree; that her pulſe was hard; that thoſe muſcles of the neck were ſomewhat ſwell'd, rigid, and affected with pain; that there was a pain alſo which deſcended in the courſe of the ſpine, and that it was with difficulty the lower jaw could be drawn down from the upper: that the patient herſelf was almoſt ſtupid, and anſwered ſlowly; and indeed, that ſhe was ſometimes a little delirious: that ſhe did not ſee very well; and that her eyes ſeem'd to be convuls'd as it were: but that theſe laſt ſymptoms were then gone off; yet that the others had now remain'd for ſeveral days.

He moreover told me, that the pain had, within theſe few days, return'd to the place which was formerly ſtruck; although, to the judgment of the touch, and of the ſight, no diſorder appear'd in the part. On ſeeing the patient, ſoon after, I perceiv'd that what he had related was but too true, and that there was now no room for remedies. Having, therefore, propos'd ſome things of little importance, on which no calumny could fall, merely to comply with cuſtom; I call'd aſide one of the elder of her relations, and told him how much I apprehended from the patient's caſe: after which I took my leave, thinking it unneceſſary to return any more. And, in fact, two or three hours after I was gone, her ſpeech left her: and within two or three days ſhe died.

If we had been permitted to examine the internal parts of the ſcull, I do not doubt, but as our Marchetti (*p*) found pus upon the membranes and brain, in a man, who, having been ſlightly wounded in the head, ſo that not even the bone was laid bare, was, after three months, ſeiz'd with a fever, and after that with a pain which return'd into the wounded part, where was no appearance of diſeaſe, and in this manner died; I do not doubt, I ſay, but I ſhould have found it ſo much the more in this woman, as ſhe had not, like that man, been without any ſymptom of a wound in the head, either in the fever, or before it; but had been already troubled with ſeveral ſymptoms, for four months and more before the fever, and with as many after the time of being attack'd with the fever.

Thus you very plainly perceive, that caſes may happen, wherein either no ſymptoms of blood being extravaſated in the cranium, offer themſelves in the beginning, or they are very ſlight; but after a long interval, ſo many and ſo violent ſymptoms crowd upon and attack the patient, that

(*p*) in additis ad Obſ. 15.

neither

neither in the firſt part of the diſeaſe, which is convenient for trepanning, the patient can be ſtruck with ſuch a fear as to make him admit of that operation; nor in the latter part can the phyſicians hope to be of any uſe to the patient thereby; as you cannot ſuppoſe, after ſo long a ſpace of time, and after the exiſtence of ſo many deſtructive ſymptoms, that a corruption of the parts was not brought on, though it was abſent, almoſt beyond belief, in that very rare obſervation of Scultetus (*q*).

18. But what, you will ſay, can make patients of this kind, or their relations, and others who are concern'd for them, ſo averſe to this remedy, even at a time when violent ſymptoms are immediately preſent? Read over again all that has been ſaid above (*r*) of the cauſes for which it is to be ſuppos'd that this remedy has been deſerted in ſome cities, and to thoſe alſo add that which is gather'd from the following hiſtory of Mediavia.

19. A boy, of fourteen years of age, was ſtruck on one ſide of the ſinciput with a pole, about the middle of Auguſt, in the year 1739. At the ſame time an old man had been ſtruck on the head alſo. Both of them had fall'n down after the blow; both had vomited; and ſoon after been ſeiz'd with a fever. Both of them were receiv'd into the ſame hoſpital; and both of them attended to with equal diligence by the phyſician and ſurgeon. Thus far the caſes were in every reſpect ſimilar. But now I will tell you the diſſimilar fate, of the boy firſt, and then of the old man. The fever having left the boy about the fourth day, attack'd him again on the eleventh, being always attended with a torpor, ſometimes with a delirium, or convulſions, or an eruption of blood from the noſtrils; though a ſufficient quantity of this fluid had already been taken away in the beginning. No remedies, therefore, being of any advantage, he died within a very few days.

The cranium, when inſpected by means of a bright and oppoſite light, was found not only not to be fiſſur'd, but ſcarcely to ſhow any difference, when the part which had been ſtruck was compar'd with the other part. But betwixt the part which had been ſtruck and the dura mater, ſomething ſimilar to mucus occurr'd, and under this mucus the dura mater was alter'd from its natural colour. But betwixt this membrane and the pia mater, where it inveſted almoſt the whole upper ſurface of that hemiſphere, was a great quantity of pus of a yellow and green colour, and very fœtid in its ſmell: and all that part of this membrane which had been cover'd with pus, was increas'd beyond its natural thickneſs in a triple or quadruple proportion; its ſurface being in a manner granulated. Beſides this nothing was obſerv'd, not even in the ventricles, no water being found therein. Thus far of the boy. But as to the old man, he eſcap'd quite ſafe and ſound.

20. Now, if you tell the common people, that this boy might certainly have eſcap'd, if the bone had been perforated, and the blood which was extravaſated beneath had been extracted; without doubt, the people would immediately reply, But the old man, who had likewiſe been ſeiz'd with the ſame ſymptoms in the beginning, recover'd totally without that remedy. It is true, you would not want wherewith to rejoin to thoſe who ſhould argue in

(*q*) Cit. ſupra in fin. n. 16. (*r*) N. 12, & ſeq.

this

this manner. But what are theſe reaſonings to the people, who are always taking new arguments from all the cures which have happily ſucceeded without the uſe of the trepan in wounds of the head, to make themſelves ſtill more averſe to it? And this does not, I ſuppoſe, happen among us only, but in other places likewiſe; for in others, examples of cures of this kind, alſo, frequently occur. What the ſymptoms are which ſhow violent injuries to exiſt within the cranium, and ſuch as would ſeem to require trepanning, you will learn from ſeveral books, and in particular from thoſe which belong to the *Commercium Litterarium* (*s*).

Where you may look for other examples, appears not only from the *Acta Eruditorum Lipſienſia* (*t*), but from the diſſertation of Jo. Andr. Conradus (*u*), and others, whom, for the ſake of brevity, I purpoſely omit; as I alſo do the obſervation of Grimmius (*x*), and two of Burgouverus (*y*), one of which is that wherein he himſelf would have perforated the cranium, if the perſons about the patient had not been againſt it; as that ſurgeon alſo would of whom Rouhault (*z*) makes mention, if Mery had not diſſented. Yet all the patients that I have referr'd to were perfectly cur'd without the aſſiſtance of the trepan, and ſome of them even very ſoon.

But that you may the more clearly perceive with how much propriety I have ſaid it happens, in caſes of this kind, that perſons are more and more averſe to perforations by the trepan, I will tell you what happen'd here in the year 1729. The coachman of a noble matron not being able to keep his horſes in with the reins, ſhe threw herſelf out of the chariot, as it mov'd along with great velocity, and had the ſame thing happen to her that happens to others, in general, in the ſame caſe; that is, ſhe fell headlong on the ground, which was, from the nature of the place, and the ſevere ſeaſon of the year, cover'd with ſtones and very hard ice. She, therefore, hurt her head ſo grievouſly, that ſhe was carried home for dead.

The phyſicians, having done all that ought to be done, and is cuſtomary to be done, with the utmoſt diligence, hop'd what Marchetti, as has been ſaid in the former letter alſo (*a*), had ſeen in ſome perſons after a fall, or an injury on the head from a blow, "that loſing their internal ſenſes, and "being depriv'd of feeling and motion," yet not being ſeiz'd with the other ſymptoms that are taken notice of by Hippocrates, they ſhould, in the ſame manner, ſee the woman "entirely freed from her diſorder on the following "day." But as in this hope they were diſappointed, I was call'd to the patient.

From the appearance of her head we could not argue in what part, particularly, it had been ſtruck; nor could her ſenſation, or voice, of which ſhe was entirely bereft, make this known to us. I, therefore, gave it as my opinion, that, when the other things were done which contributed to re-

(*s*) Vid. A. 1739. Hebd. 52. n. 1. & A. 1741. H. 16. n. 3. & A. 1743. H. 35. n. 2. H. 47, n. 1. ad 194. & 193. & 714.

(*t*) A. 1693. M. Nov. in relat. novæ Edit. Barbett.

(*u*) De Vuln. Front. inflict. in Reſolut. ad n. 2.

(*x*) Eph. N. C. Dec. 3. A. 9, & 10. Obſ. 87.

(*y*) 6, & 7. in Auctar. ſupra ad n. 17 cit.

(*z*) Tr. ſupra ad n. 14. cit. c. 7.

(*a*) N. 10.

vulſion and reabſorption, if it ſhould happen that any blood was extravaſated within the ſkull, to the whole of the head ſhould be immediately applied ſuch things as, by moderately attenuating and corroborating, might aſſiſt that abſorption: that Cornelius Celſus (*b*) had aſcrib'd a great deal to external remedies, even where the cranium was manifeſtly fiſſur'd: that what Galen had done afterwards, and many others formerly, may be underſtood from Magatus (*c*), who had alſo himſelf begun the cure in this manner.

What the authors more modern than Magatus thought, I had learn'd even from the reading of my anatomiſts with whom I was ſo frequently converſing; and particularly of Bartholin (*d*), Wepfer (*e*), and Ruyſch (*f*). That we, indeed, were in Italy, a region much warmer than theirs; but that Magatus, to omit others, was in this region alſo: and that, at this time of the year, the cold was often more intenſe than in other times of the year among them; and that, therefore, our matron, like the woman ſpoken of by Ruyſch, was hurt from this cauſe, that "ſhe had fall'n from the "chariot upon the ground when harden'd with the froſt." That, therefore, I would make uſe of the ſame fomentation which he had frequently made uſe of with ſucceſs, and not contrary to the cautious admonitions of Magatus, but having in it ſome of the ingredients that he had recommended.

The phyſicians came into this opinion: nor had they reaſon to repent it; as, by the continu'd uſe of this remedy, the patient firſt became a little better, and then came quite to herſelf; and, finally, ſo far recover'd, without any remaining inconvenience, that ſhe liv'd more than twenty years in a good ſtate of health, till ſhe was at laſt carried off by mere old age.

But this inſtance of ſucceſs made men ſtill more averſe to the perforation of the cranium, and caus'd the fomentation I have ſpoken of to be recommended from that very time both by the phyſicians and ſurgeons; but to be particularly deſir'd by the patients and their relations, and to be in very frequent uſe here; and this to ſuch a great degree, that I was ſometimes afraid, leſt, being improperly made uſe of, it ſhould be as injurious to ſome perſons as it had been profitable to others. For I have ſeen it applied in the hotteſt ſeaſons that we have in this country, as it was in that caſe which the preſent recals to my mind, and which I will mention to you in a few words, though not on account of this animadverſion only, but on account of ſome others alſo.

21. A noble count, happening to ſit on a pretty high bench, which gave way under him, fell backwards, and daſh'd the hinder part of his head againſt the wall, with ſo much the more violence as it was bald, and he himſelf of a tall ſtature. He perceiv'd no diſorder at that time, except that a great number of ſparks ſeem'd to be flying about before his eyes. But afterwards he had a very troubleſome pain about the forehead and the eyes, watchings, fever, and a flux of the inteſtines. The fever went off. Soon after it return'd with the ſame ſymptoms. I was call'd into conſultation.

Some of the phyſicians were particularly diſpleas'd with the inteſtinal flux.

(*b*) De Medic. l. 8. c. 4.
(*c*) L. 2. ſupra ad n. 12. cit. c. 38. 41. 49.
(*d*) Cent. 2. Hiſt. Anat. 41.
(*e*) Exerc. de loco aff. in Apopl. & in Auctar. Schol. ad Hiſt. 6.
(*f*) Obſ. Anat. Chir. 60.

For they had read this in Marchetti (*g*): "Beſides the ſigns propos'd by Hippocrates, it is to be obſerv'd, that a flux of the belly coming on in wounds of the head, notwithſtanding the abſence of other ſymptoms, is a ſign of the brain's being injur'd: - - - - and that almoſt all theſe perſons die, on account of the brain being injur'd in the internal part, where it is ſtretch'd out into the medulla ſpinalis, and where is the origin of the nerves," and among the others of thoſe that go to the ſtomach. I, however, having enquir'd into all things accurately; and, as it was the month of July, in the year 1739, having found that a greater quantity of water might eaſily have been taken than the ſtomach of an old man would bear; for water had been preſcrib'd as his common drink; ſpoke to the following effect:

I will omit to diſcuſs this queſtion here, whether Marchetti, when he ſaid that the other ſymptoms were abſent, meant alſo to except thoſe which he ſays were propos'd by Hippocrates, and which certainly are abſent in this caſe. I will only ſay this, if the patient had fall'n down at a time when his ſtomach was fill'd with meat and drink, eſpecially ſuch as did not agree with him, and had immediately thrown them up; certainly, there would be no occaſion to be terrified by this vomiting. Now, then, as there ſeems to be another reaſon why the belly ſhould be relax'd, we need not be under any great fear about this. Let a ſomewhat ſmaller quantity of water be drunk, and let it be a little medicated, ſo as to prevent it from relaxing the ſtomach. And as to the fomentation, (for I had heard that this was made uſe of) I make no doubt but it may be properly applied by you, provided it be ſomewhat more dilute than uſual, and us'd more moderately; nor applied by means of flannels, nor on a great number of cloths. And it was not long after this that all the ſymptoms went off, and the patient recover'd; being ſtill alive at the time of writing this letter, and in good health, though fourſcore and ſix years of age.

But before I ceaſe to ſpeak of this fomentation, I would have you to obſerve, that almoſt all thoſe perſons that I ſaid (*h*) had been ſav'd without the trepan, which otherwiſe ſeem'd neceſſary, and others of the ſame kind, have been ſav'd by means of this fomentation; or, at leaſt, by ſomething very ſimilar to it; as, for inſtance, thoſe whom Slevogtius (*i*) refers to in theſe words: "By ſuch remedies the moſt violent injuries of the head, that formerly had occaſion for cuttings, burnings, ſcalpings, trepannings, and other dreadful operations, are every day cur'd by our ſurgeons:" and ſometimes by theſe remedies "alone;" ſo that by a French ſurgeon nam'd Pincon (*k*), a ruſtic was cur'd "who lay ſpeechleſs ten days, and was conſider'd as deſperate;" a young man by Grimmius (*l*), who had been ſeiz'd "with a delirum, a vomiting, a fever, &c." a boy by Trew (*m*), who was "depriv'd of all his ſenſes, paralytic" in the ſide oppoſite to the blow, and in the other "perpetually agitated with convulſive motions."

Yet frequently other remedies are join'd to it; and among theſe, when

(*g*) In addit. ad Obſ. 15.
(*h*) N. 20.
(*i*) Differt. de Carie Cran. § 20.
(*k*) Vid. Dan. Hoffman. Differt. de ſanat. cerebri quaſſ.
(*l*) Obſ. 87. ſupra. ad. n. 20. cit.
(*m*) Commerc. Litter. A. 1741. ibid. cit.

it was allowable, venæſections, that "the veins may be render'd hungry, "as it were, by having ſome quantity of their blood taken away," as Wepfer (*n*) ſpeaks, "and may more greedily drink up the extravaſated blood;" which that remedy I have ſpoken of, externally applied, and certainly penetrating by its efficacy where trepanning cannot reach and bring it out, (whatever its efficacy or mode of acting may be) "ſo diſpoſes, as to make it fit "to enter the blood-veſſels again." For thus he explains both his own obſervations, and thoſe of others; as he even ſays above (*o*), "that he re-"members the diſſipation" of extravaſated blood "to have been brought "about very frequently in his country, with great ſucceſs, by proper fomen-"tations; without the uſe of the trepan, and without any detriment to the "patient."

As to this reabſorption, however, I have written to you formerly (*p*) what has been obſerv'd in the brain after apoplexies that had formerly preceded, and even after an old wound of the head, without a perforation of the cranium, and have ſaid whence I ſuppoſe this reabſorption to happen; for which reaſon I ſhall add no more. Nor ſhall I ſay any thing of another uſe of trepanning; I mean, that the bones of the ſkull, when depreſs'd, may be rais'd up, the ſharp fragments extracted, and the prominent needle-like points of the internal lamina which has happen'd to be fiſſur'd: for how long, and in how great a degree, theſe may be injurious, the excellent obſervation of Platner (*q*), among others, ſhows by diſſection: I ſhall not, I ſay, add any thing on this ſubject, leſt, if I ſhould ſay that ſome objection may be alſo made even to this remedy ſometimes, which, certainly, other remedies, and nature itſelf, are leſs able to ſupply the place of; I ſhould ſeem to give more credit to vulgar prejudices, than to the dictates of reaſon and of prudent practitioners.

22. For now, as I have ſpoken above merely of perforating the cranium, not only as much as is neceſſary to make the diſcourſe that I had begun complete; but alſo (which I would not wiſh) to create a falſe and unjuſt ſuſpicion that I am on the ſide of the people in this queſtion, and have an immoderate averſion to this kind of remedy, which, when cautiouſly and properly applied, I readily confeſs to be very uſeful and even neceſſary: let us return to diſſections. And as two of our Mediavia's remain, I will give you them before my own. The firſt belongs to thoſe that have been already propos'd; I mean thoſe in which, if there was any diſorder of the cranium, it did not reach to the internal parts. And the ſecond, to thoſe in which the diſorder did reach thereto.

23. A certain man, falling upon his face, daſh'd his forehead againſt the ground on the right ſide, about the middle of the bone. No vomiting, nor any other ſymptom, happen'd immediately after the fall, except ſome ſlight diſorder of the ſtomach. But ſoon after, he was ſeiz'd with a conſiderable fever, and a ſleepineſs. About the fourth day, both of theſe ſymptoms went off: and he was well. He remain'd in the hoſpital, however, for the cure of his wound, which was of a good colour, together with the bone

(*n*) Schol. ſupra ad n. 17. cit.
(*o*) Exercit. ſupra ad n. 20. cit.
(*p*) Epiſt. 2. n. 16.
(*q*) Inſtitut. Chirurg. § 532. not. *d*.

that

that was laid bare. About the ſeventeenth day a violent fever came on again, and a heavy ſleep. The colour of the wound and of the bone became brown. The bone was ſcrap'd, and appear'd to be white beneath. Yet the man died with the ſame, and no other ſymptoms, about the twentieth day, which was the twelfth of April, in the year 1740.

Upon opening the ſcull, a fiſſure was indeed obſerv'd therein, which paſs'd tranſverſly a little above the eye-brow, that lay under the wound. But this did not reach to the internal parts. However, where the bone had receiv'd the blow, there, betwixt itſelf and the dura mater, lay a little of a kind of jelly as it were. And the correſponding hemiſphere of the cerebrum was of a black colour, inclining to green; nor yet in that place only, but every where; and had a very putrid ſmell. This colour deſcended quite to the lateral ventricle itſelf, infecting all the parietes thereof, the baſis excepted. Moreover, the anterior part of that ventricle was not lacerated; but dilated to ſuch a degree, as to contain a quantity of coagulated blood, equal to the ſize of a man's fiſt. The remaining part of the ventricle contain'd a bloody ſerum, as the left did alſo.

24. The blood which was found within the ventricle, was certainly effus'd from ſome ruptur'd veſſel, either of the plexus choroides, or of thoſe that paſs through the ſurface of the parietes of the ventricle. But ſhall we ſuppoſe that veſſel to have been ſlightly ruptur'd, at the time when the head receiv'd the blow, and that the blood had begun to be diſtill'd ſlowly, and by degrees, from that time? or ſhall we only ſuppoſe it to have been weaken'd then; and, finally, that a gangrene of that hemiſphere coming on, it was ruptur'd, and pour'd out its blood haſtily? If you ſhould chooſe to ſuppoſe the latter, you will, in my opinion, leſs eaſily explain why the man did not then die much ſooner, and with other ſymptoms, almoſt like an apoplectic perſon; and how, without any laceration of the ſubſtance, the ventricle was ſo dilated; ſo that it is moſt probable the blood was diſcharg'd gradually and ſlowly, till it increas'd to ſo great a quantity; and that the ventricle gave way gradually in proportion.

Nor let it be any objection with you to this hypotheſis, that the man ſeem'd to be very well from the fourth day to the ſeventeenth, without a fever, or any ſymptom whatever. For it is not only to be ſuppos'd, that to a gangrene ſo widely diffus'd, a deprav'd diſpoſition in the brain muſt have preceded; but even in the moſt conſiderable diſeaſes of this organ, it does not very rarely happen, that either ſome ſlight ſymptoms thereof, or none at all, are obſerv'd, even for a much longer ſpace of time.

Call to mind, I beg of you, thoſe things that are produc'd above (*r*), from our obſervation, or at leaſt from the obſervation of Marchetti. Read, not ſo much the ninth obſervation of Fantonus the father, as the ſcholium of his celebrated ſon to the twenty-fifth. And to omit that of Avignon (*s*), which is an extremely rare obſervation, as therein, though ſo great an injury of the cranium, the meninges, and the brain, had taken place; as the courſe of the cure demonſtrated; yet no ſymptom exiſted, from the beginning to

(*r*) n. 17. (*s*) Commerc. Litter. A. 1731. Specim. 21.

the perfect completion of the cure, that is, to the ſeventy and ſixth day; there is a hiſtory in Bohn (*t*), from Lamzwerdius, of ſymptoms not ſucceeding to two fiſſures of the ſinciput, till the thirty-ſixth day: and there are others from Montanus in Rouhault (*u*), wherein the ſymptoms did not come on till the ſeventeenth, twentieth, or twenty-firſt day, when they generally prov'd mortal; and this happen'd at Antwerp, for the ſpace of a whole year, to the greater part of thoſe who had, in this period, receiv'd blows upon the head.

Read thoſe obſervations, moreover, which Poupart, and particularly Vacher, have communicated to the Royal Academy of Sciences at Paris (*x*). From theſe, and from others that I deſignedly paſs over, you will ceaſe to wonder if at any time, as in one juſt now propos'd by us, ſo in ſome others that are given either in this or the former letter, you ſhall ſee that conſiderable diſorders lay hid in the brain ſome days, without any bad ſymptoms, and in particular without any fever. There are a great number of things in this organ, not only in a natural ſtate, but in a preternatural ſtate, of which we know not how to conceive.

And that our anceſtors alſo were properly and juſtly ſurpriz'd thereat, you will underſtand even from what is added to the obſervation of Salmuthus, in this ſection of the Sepulchretum (*y*); which obſervation relates to the preſent ſubject in almoſt every view: this addition is taken from Berengarius, or, if you pleaſe, from Carpenſis, as they more frequently call him from his country: and this is a circumſtance, the want of attention to which has deceiv'd a very modern, and, in other reſpects, not unlearned ſurgeon, who, having ſaid that Berengarius had ſometimes perforated the cranium upon the very ſutures with ſucceſs; immediately ſays, that Carpenſis had done the ſame, as if Carpenſis had been quite another perſon.

But from a lingering death, after a blow of this kind, let us come to a very ſpeedy one, as in the ſecond obſervation that I have promis'd you.

25. A country-woman falling headlong down ſtairs, hurt her head in ſo great a degree, that having loſt the power of ſpeech, and of motion, but eſpecially in her lower limbs, and diſcharging blood from her noſtrils, and one of her ears, ſhe died within an hour.

The baſis of the cranium, which contain'd a large quantity of extravaſated blood, was broken tranſverſly, the fracture paſſing from one ſide to the other, before the oſſa petroſa, through the poſterior parts of the ſphenoidal ſinuſſes; the bony part of the meatus auditorius being alſo ruptur'd, together with the membrana tympani in that ear which had diſcharg'd blood. The lateral ſinuſſes of the dura mater were alſo ruptur'd: and, beſides the other injuries, the cerebellum itſelf was ſomewhat injur'd.

26. If beſides this injury of the cerebellum, whatever it was, there had not been other very violent ones, ſuch as a very great concuſſion of the cerebrum, and a very great compreſſion both of cerebrum and cerebellum, in proportion to the quantity of blood extravaſated within the cranium, and

(*t*) De Renunc. Vulner. Sect. 1.
(*u*) Tr. ſupra ad n. 14. cit. c. 11.
(*x*) Hiſt. de l'A. 1700. Obſ. Anat. 19. & de l'A. 1743. Obſ. Anat. 12.
(*y*) § 8. Obſ. 10.

parti-

particularly from the rupture of the lateral ſinuſſes; do you think death would have come on ſo ſoon? I confeſs I ſhould not readily believe it; notwithſtanding I know that conſiderable and ſudden injuries of the cerebellum are, for the moſt part, wont to be more ſpeedily and ſuddenly deſtructive, than equal injuries of the cerebrum; at leaſt in the more perfect, as they call them, and adult animals, and thoſe that approach the neareſt to the ſtructure of man.

In this controverſy therefore, which I have fall'n upon by chance, and of which I remember that you have formerly aſk'd my opinion, do not, in concert with men in other reſpects very learned, take notice not only of inſects, but not even of birds, or fœtuſſes, or newly-born animals of any kind. For Ariſtotle (z) himſelf has even obſerv'd formerly, "that this evi-"dently happens in inſects, as in waſps and bees;" that is to ſay, when the part "which is call'd the head is taken off, they ſtill live." And it is ſo long ſince as when I was a very young man, that Valſalva affirm'd to me he had irritated, to a very great degree, the cerebellum of birds, and yet that they had not died immediately.

And, indeed, I myſelf can relate what I ſaw of this kind in two cats, which were two days old, when I open'd the heads of them while living, and in the ſummer time. For one hemiſphere of the brain being laid open in each of them, and the uſe of the pia mater, in confining the brain, being obſerv'd; for where it had happen'd that a ſmall part of this membrane was lacerated, there a ſmall part of the brain extruded itſelf, and became prominent; I took away the whole of that hemiſphere piece-meal: and yet the power of feeling and moving did not ſeem to be loſt, or even in the leaſt diminiſh'd, in the correſponding and oppoſite limbs. Nor indeed were theſe faculties loſt when I had ſoon after wounded the cerebellum of the other cat.

But they were immediately loſt upon cutting deeply into, and tearing aſunder, the cerebellum of the other, and the beginning of the ſpinal marrow; they were loſt, I ſay, in the limbs, and the whole body, as much of it as then preſented itſelf to my eyes; if, however, you except the heart, and its auricles; for the motions of theſe cavities, and of that viſcus, ſtill continu'd lively and vigorous: and even when, ſome little time after, I cut off the head from the trunk, this motion nevertheleſs continu'd the ſame, as if I had not cut it off. Cutting off the great veſſels therefore, ſoon after that, I took away, together with them, the heart; which then finally ſoon grew quiet: although not long after this I perceiv'd, by compreſſing it betwixt the fingers, that it was acting even then by a powerful exertion.

I know therefore that they ſay truly, who have aſſerted, that cats hold out the longeſt of almoſt any animals, in anatomical experiments. Yet I underſtand, at the ſame time, that if we attend to thoſe things which we obſerve in this kind of animals, eſpecially when newly-born, and ſtill more to what is obſerv'd in inſects, birds, and human fœtuſſes themſelves; as, for inſtance, thoſe that are ſometimes born not only without the cerebrum and cerebellum, but alſo without the medulla oblongata and ſpinalis; I ſay, if we attend to theſe things, it will, I ſee, of courſe happen, that many conſequences ſeem

(z) De Juvent. & Senect. c. 1.

to

to ariſe therefrom, which argue againſt the uſes of both theſe medullæ and cerebrum; not to ſay againſt the uſes of the cerebellum itſelf.

I likewiſe would not have you here attribute too much to certain diſorders of the cerebellum, which are generated in a longer or ſhorter ſpace of time, but certainly not ſuddenly. Of the former kind are theſe: from Mauchart (*a*), and from Littre (*b*), of the cerebellum being indurated in two hydrocephalous children, or ſcirrhous; yet in ſuch a degree only that in the latter, two, although very ſmall, places remain'd, wherein the cerebellum was in a natural ſtate: and in the former, one of the lobes was leſs enlarg'd, as well as leſs indurated: from Briſſæus (*c*) alſo, a hard tumour, but one that had form'd itſelf in the middle of the cerebellum: from the celebrated Lieutaud (*d*), a bone of no ſmall ſize within one of its lobes: from Peyron (*e*), the whole cerebellum converted into a membrane, which involv'd in it a body of the bigneſs of a hen's egg, made up of many and hard glands; into which body ſome will perhaps ſuſpect that the cerebellum had been chang'd; as ſeems to have happen'd formerly in regard to the cerebrum; rather than into that membrane: and to have been conceal'd under that appearance, juſt as they would of ſome parts of the cerebellum itſelf, in which Harderus (*f*) found three ſmall globules; for the largeſt was in the beginning of the medulla ſpinalis: or of Wurffbainius (*g*), who found ſeveral ſmall glandular bodies in the cerebellum, which was yellow and fœtid indeed, but not putrefied; or of Flaſcus in Lanciſi (*h*) (for Lanciſi did not ſee it) who found a body made up of many globules.

Nor indeed did that ſcirrhus belong to the whole of the cerebellum; as ſome ſeem to hint, and as others expreſsly affirm; which the celebrated Haller found in a beggar girl, as this gentleman aſſerts (*i*) that it had occupied "the middle part of the cerebellum," that is, "the left lobe;" ſo that it certainly did not equal that which I found in the cerebellum of a man in the beginning of the year 1754, as this, though leſs hard, and leſs compact, beſides occupying the ſame lobe almoſt wholly, occupied the middle part alſo, and the neareſt portion of the right lobe, as you will learn from the hiſtory which I ſhall ſend you on a future occaſion (*k*).

And to the ſecond kind of diſorders in the cerebellum belong, if you readily ſet aſide the obſervation which Peyron (*l*) has alſo produc'd among ſome of thoſe above, as others likewiſe have done ſince, from Fantonus the father, ſince the very eminent ſon (*m*) thinks, that inſtead of the cerebellum being "corrupted," we are to underſtand only, that it was ſoft, and not of the natural colour; to this ſecond claſs, I ſay, belongs, firſt, that obſervation which is made by Maſſa (*n*), of an abſceſs in the cerebellum, after a wound of the ſinciput "being ſuppurated with a laudable pus:" and in the next

(*a*) Eph. N. C. Dec. 3. A. 4. Obſ. 59.
(*b*) Hiſt. de l'Acad. R. des Sc. A. 1705. Obſ. Anat. 13.
(*c*) apud Platner. Inſt. Chir. adnot. ad § 548.
(*d*) Hiſt. de l'Acad. R. des Sc. A. 1737. Obſ. Anat. 8.
(*e*) Mem. de la même Acad. A. 1741.
(*f*) Apiar. Obſ. 58.
(*g*) Eph. N. C. Dec. 2. A. 9. Obſ. 237.
(*h*) De nox. Palud. Effl. l. 2. Epid. 2. c. 6.
(*i*) Opuſc. Pathol. Obſ. 1.
(*k*) Epiſt. 62. n. 15.
(*l*) loco indicato.
(*m*) Schol. in Edit. ult. ad eam Obſ. quæ 9. eſt.
(*n*) l. Introd. Anat. c. 28.

place,

place, one written to me by a friend in the year 1735, of the right lobe of the cerebellum being penetrated, univerſally, by a green and fœtid ſanies, after having affected the neighbouring temple-bone here and there with a caries, and corroded the dura mater: and again one of mine, which, if you conſider the cauſe, is not unlike this, and which I have ſent to you formerly (*o*); but unlike in this circumſtance, that the ſanies had vitiated the ſame lobe of the cerebellum ſuperficially, and that only in ſome meaſure: and, finally, a fourth of the celebrated Plancus (*p*), of an abſceſs which occupied two third parts of that lobe.

Nobody, certainly, has ever been carried off immediately and by a ſudden death, in conſequence of one or the other kind of diſeaſe, when he ſeem'd to be in health; nor has the diſorder even been form'd ſuddenly: and to thoſe diſorders that are generated by degrees, the nature of the body accuſtoms itſelf in ſome meaſure, and ſupplies, from ſome other part, as far as lies in its power, what is wanting in the diſeas'd part.

An example of this kind I will produce in the nerves themſelves. For what do you ſuppoſe could be the reaſon that a dog, whoſe recurrent nerve, both on the left and right ſide, was cut by the celebrated Emmet (*q*), recover'd in ſome meaſure, the following day, the voice that he had loſt immediately on the inciſion, and continu'd to recover it more and more every day?

The third recurrent nerve, you will ſay, as it lies behind the aſpera arteria, could not be divided. But this unuſual nerve had certainly exiſted the day before; and other ſmall branches, I ſuppoſe, had exiſted, that aroſe from the par vagum, above the ſection of theſe nerves, when perform'd by Valſalva (*), or from ſome other nerves that went to the larynx, in a whelp, which, though ſhe ſtrove before in vain, could at length bark on the ninth day.

That is to ſay, either I am deceiv'd, or the ſpirits, which could no longer paſs through thoſe larger nerves that were cut aſunder, had, by this time, ſufficiently dilated, for themſelves, the paſſages through the leſſer nerves, which were before not ſufficiently open, and which communicate, higher up, with thoſe larger ones, either on the outſide or the inſide of the brain, and go to the ſame place. I ſay ſufficiently dilated; for in men that are affected with increaſing diſorders of the cerebellum, to whom you will transfer theſe remarks, it is ſcarcely probable, that, after theſe diſorders have wholly occupied the cerebellum, the motion of the heart and the lungs ſhould have been ſo vigorous and ſtrong as before: nay, indeed it is aſſerted by ſome of them, as in the boy ſpoken of by Littre, that the reſpiration was weak, and that the pulſe was very ſmall: and, in the obſervation which I have ſaid was written to me, a languor was taken notice of: and in that alſo which I have ſent to you, it appears, that the ſtrength of the pulſe had been quite ſunk and diminiſh'd.

It would be much more difficult to ſatisfy the objection which I remember to have read in the work of ſome grave author; for who he was I can-

(*o*) Epiſt. 14. n. 3.
(*p*) in Append. ad Epiſt. de Monſtr.
(*q*) Tentam. de Cur. Morb. Cephal. n. 30.
(*) Epiſt. Anat. 13. n. 37.

not

not remember; I mean, that in a thief, whoſe memory was very weak, no trace of the cerebellum was found by Benivenius: if Benivenius (*r*) had not written the following words only, "that the poſterior part of the head, "where the ſeat of the memory is, was ſo ſhort in this thief, as to con-"tain a very ſmall portion of brain;" ſo that if any one, by reaſon of that ancient credulity of the ſeat of the memory, ſhould be willing to underſtand this of the cerebellum, rather than of the cerebrum; he, nevertheleſs, does not acknowledge, that the cerebellum was entirely wanting.

This then being the ſtate of the queſtion; let us ſet theſe things aſide, and returning to that point from whence the controverſy took its riſe, and by which it may be more eaſily decided; let us compare conſiderable and ſudden injuries of the cerebellum, with conſiderable injuries of the cerebrum, and even, if you will, with very violent and ſudden injuries, ſuch as happen from wounds.

27. That there are ſome wounds of the cerebrum which bring on a very ſpeedy death, we are ſo far from having it in our power to deny, that it is rather to be wonder'd at, that two obſervations, and no more, ſhould be pointed out, to this effect, by ſome very learned men, in neither of which death immediately follow'd; whereas, on the other hand, no body can be ignorant, from the experiments of many of the moſt excellent authors, that wounds inflicted on the cerebellum are wont, for the moſt part, to take life away, either immediately, or in a very little time. For that they do not always kill with the ſame celerity, I have readily confeſs'd. But I enquire how many times, at length, and how ſlowly this has happen'd. Franciſcus Antonius Cattus, profeſſor of anatomy amongſt the Neapolitans, has ſaid, in a little work (*s*), which was printed at Naples in the year 1557, "that he can eaſily prove by experiment," a circumſtance which he does not ſeem to have prov'd without a wound of the cerebellum. His words are, "though all the other parts of the brain are wounded, death is not a "natural conſequence thereof; yet when the poſterior ventricle is wounded, "I have ſeen that the animal immediately falls down and dies."

But if, beſides the cerebellum, which; although it does not every where comprehend this fourth ventricle, as if proper to itſelf, as the cerebrum does its ventricles; nevertheleſs compleats it, and immediately covers it; you ſhould chooſe to ſuſpect, that with it he had alſo wounded the medulla oblongata, with lies beneath; experiments would not be wanting (*t*), from whence you might underſtand, that ſudden death does not neceſſarily, and of courſe, follow on account of this wound in particular.

It were to be wiſh'd, that Coiterus, in thoſe anatomical obſervations, which he publiſh'd ſixteen years after Cattus, had touch'd upon ſomething in relation to the cerebellum; ſince he alſo, as to what relates to the cerebrum of lambs, kids, and living dogs, outſtrips the more modern authors, by making the following aſſertions: "And what is a circumſtance, that de-"ſerves the higheſt admiration; I have laid open the brains of living

(*r*) De abdit. nonnull. ac mirand. morbor. &c. cauſis, c. 89.

(*s*) Iſagog. Anat. c. 25. in fin.

(*t*) Vid. apud Teubeler Diſſert. de Vulnerib. cerebi non ſemper lethalib. §. 43. & ſeq.

"brutes,

" brutes; I have wounded them, and without touching the nerves, or their " origins, and without wounding the ventricles that lie in the middle, I " have taken them out, but have not found any ſign of the voice, reſpira- " tion, or ſenſe being injur'd in theſe animals. Birds live ſome time with- " out the cerebrum, as any one may experience in hens, or pullets, if he " cuts off the upper part of the beak with half of the head, and takes out " the greater part of the brain."

But in the preceding, and the preſent century, curious and enquiring men have not omitted even to take out the cerebellum of birds. Thus the celebrated Zimmermann (*u*), having drawn out the cerebrum and cerebellum of a pigeon, the creature died ſuddenly and entirely: and that you may not be at a loſs to determine from whence this chiefly happen'd; he took away the cerebrum from another pigeon, which, nevertheleſs, liv'd ſome time; yet, when the cerebellum was taken out, " it periſh'd ſud- " denly."

But not to recede, however, from the more perfect animals, as has been propos'd above; when I firſt ſent this letter to you, one dog of Chirac was made mention of in this controverſy; which, amongſt a great number that died immediately, or not long after, had ſurviv'd twenty-four hours after making the experiment. But I now ſee that in the diſſertation publiſh'd by the celebrated Zinnius, in which he has alſo given the experiment made by himſelf on the cerebellum (*x*), a dog is taken notice of, which liv'd as many hours after the perforation of that viſcus; and even another is mention'd, from which Petit had cut away a part of the left lobe of the cerebellum; and yet this animal liv'd ſix days.

However, it is certain that theſe are very rare examples, and only a few in all, if they be compar'd with the great number of other inſtances, of dogs that we know to have died immediately upon the experiment; or thoſe which he himſelf confeſſes, from his own obſervations, and from the ſelect obſervations of others, have but juſt dragg'd on their lives " after the fourth or " fifth minute;" or " almoſt for an hour," as two or three did; or " for " three hours," as one did; or at moſt " for twelve hours," as another dog did.

And if we enquire after inſtances of very violent wounds of the cerebellum, in the human ſpecies, which have not been very ſpeedily fatal, I believe there will be ſcarcely more than two; one of theſe is quoted by Peyron (*y*) from Petit, of a ſoldier who liv'd three-and-forty hours. The other you will read in the Sepulchretum (*z*), from Binningerus, of a Dutchman, who, unleſs ſome error has crept into the impreſſion of the numbers, ſeems to have liv'd more than four days after the wound.

As to another example, of a ſervant-man from Borelli (*a*), I do not think it can be added hereto; for I do not ſee, how the ſword could paſs through the orbit, and reach to the cerebellum, without wounding that part of the cerebrum which lies between; and I think, certainly, that we ought

(*u*) Diſſert. de Irritabil. §. 27. Exp. 7. & 8.
(*x*) in Schol. ad eam Diſſert. partem §. 1.
(*y*) Mem. ſupra ad n. 26. cit.
(*z*) Sect. hac Obſ. 8. §. 8.
(*a*) Cent. 2. Obſ. 19.

to read cerebrum there, inſtead of cerebellum; yet this ſervant-man, whereſoever the wound did penetrate, was found dead the next morning. And why I think that other examples, which I have equally attended to, ought not to be recounted among the more conſiderable wounds of the cerebellum, I will ſhow preſently when I take notice of them.

But the left lobe of the cerebellum had certainly been paſs'd through by a leaden bullet in that ſoldier: and in the Dutchman, "the beginning "of the left lobe of the cerebellum appear'd black and corrupted; and "from the internal parts of its ſubſtance, a little piece of the bone of "the cranium, of a conic figure, and acute at its point, was by accident "extracted;" and on the ſame left ſide the limbs had been paralytic: and this I mention, though in a tranſitory manner, becauſe in the obſervation of Plancus, alſo referr'd to above (*b*), a hemiplegia ſeiz'd not upon the oppoſite limbs, but thoſe which lay under the injur'd lobe of the cerebellum; ſo that a doubt which has ſometimes ariſen equally to Cæſalpinus (*c*) and myſelf (*d*), may ſeem to be removable, if it conſtantly appear, by many other obſervations ſimilar to theſe, that the ſeat of the cauſe producing an hemiplegia, is wont, for the moſt part, to be found differently in the cerebellum from what it is in the cerebrum.

And when the cerebrum and cerebellum are diſeas'd both together, any one might ſuppoſe, that the diſeaſe of the former was leſs capable of producing a paralyſis in the oppoſite ſide, than the latter in the ſubjected ſide; if the ſame thing were obſerv'd in others alſo that is obſerv'd by Foreſtus (*e*) in a lethargic boy, who had the whole right ſide of his body quite paralytic, ſenſe and motion being entirely loſt; for not within the left part of the cranium, but within the right, an abſceſs was found; not in the cerebrum only, but alſo in the cerebellum.

But to return to the point in queſtion: although there are ſo few inſtances of life being protracted even for a ſhort time after a conſiderable wound has been inflicted on the human cerebellum; yet what learned and experienc'd ſurgeon, on the other hand, is there, who, though he may not have ſeen innumerable examples, has not himſelf ſeen ſome even conſiderable wounds of the cerebrum wherewith life has been long protracted?

And ſince it does not ſeem poſſible that there ſhould be any doubt on this head, and as all muſt confeſs that death is generally brought on more ſpeedily by wounds of the one than of the other; let us now ſee whether more certainly. All thoſe perſons certainly died in whom I have taken notice of the cerebellum being injur'd, not to ſay wounded. But to inſiſt chiefly upon wounds: how many of thoſe are, at length, ſaid to have eſcap'd, in whom the cerebellum was not ſlightly but deeply wounded?

You certainly ſee that the perſon, of whom it was related to Platner (*f*), that he had been "cur'd after a conſiderable part of the occiput, together "with a remarkable portion of the cortex cerebelli, had been taken away "by a ſword," does not relate to this queſtion. Nor will you ſee that the

(*b*) N. 26.
(*c*) L. 2. Quæſt. Med. 10. in fin.
(*a*) Epiſt. Anat. 13. n. 23.
(*e*) L. 10. Obſ. Medic. 11.
(*f*) Adnot. ſupra ad n. 26. cit.

Abiſſinian

Abiſſinian cur'd by our Veſlingius (*g*) related thereto any more. For although ſome authors, as I have lately obſerv'd, ſpeak of him as a man "who, being "already far advanc'd in age, had a wound inflicted on his cerebellum to the "breadth of two inches;" yet, if you read Veſlingius attentively, you will eaſily perceive (I omit that he was more than fifty years of age, "but ſtill a "vigorous man") "that a broad wound had been inflicted" on his occiput indeed; and that this wound, "penetrating through both the meninges, had "ſlightly touch'd upon the cerebellum to the breadth of two inches;" that is, had graz'd its ſurface: for in this manner Nonius Marcellus (*h*) explains that paſſage of Virgil in the eighth book of the Æneid (*i*), *ſtringentem ripas*; and therefore *ſtringo*, being the word here us'd by Veſlingius, muſt ſignify to wound ſlightly; as Servius ſays, in regard to another paſſage of Virgil where *ſtrinxit* is made uſe of (*k*), that "it gives the idea of a ſlight wound."

Nor will you here fail to recollect that Veſlingius has been taken notice of by Riolanus (*l*), as writing "in a very elegant and claſſical ſtile, yet ſome-"times obſcurely, becauſe he has not made uſe of the words and terms which "are common among phyſicians."

But if they had alſo taken notice of another wound, whereby our Falloppius (*m*) has ſaid, "that firſt a quantity of the cerebellum, not thicker "than a vetch, had been taken away; and, in the ſecond place, that when "he had extracted the ſmall bony pieces from the ſubſtance of the ſame, "another ſtill thicker part than the former had come away;" it would have been very natural to anſwer to thoſe who reckon'd this wound, moreover, in the number of the former, that not only the man was not perfectly cur'd, when theſe things were written, but that he was no more than "almoſt "recover'd;" and this alſo in particular, that if the wound had been deep, and if thoſe bony fragments had been extracted "from the internal "parts of the ſubſtance" of the cerebellum; as in the Dutchman of whom I ſpoke juſt now; the author, after writing of that wound which he now thought almoſt heal'd, and of others of the cerebrum which were perfectly heal'd, would not have immediately concluded his diſcourſe in this manner: "Wherefore, not all wounds of the cerebrum, but deep wounds only, are "mortal."

And this being the juſt ſtate of the queſtion, you will ſuppoſe that John Bohn (*n*) has done properly, who, as he had ſeen many wounds, and had read a great deal, if any other man had, upon this ſubject, aſſerted as follows: "If we conſult experience, we ſhall, perhaps, be ſcarcely able to obſerve one "who has eſcap'd after a laceration of the cerebellum; though many in-"ſtances are to be met with here and there, wherein it is ſaid that very large "wounds of the cerebrum have been heal'd."

Obſervations of this kind of cure he himſelf points out (*o*) in great number, and Donatus (*p*) alſo, and Schenck (*q*), had gather'd together; among which

(*g*) Obſerv. Anat. & Epiſt. Medic. 13.
(*h*) De Propriet. Serm. ſub litt. S.
(*i*) Verſ. 63.
(*k*) Æneid. l. 10. verſ. 478.
(*l*) In ipſo initio animadverſ. in Synt. Veſling.
(*m*) De Vulnerib. c. 6.
(*n*) De Renunc. Vuln. S. 2. c. 1.
(*o*) S. 1.
(*p*) De Medic. Hiſt. Mirab. l. 5. c. 4.
(*q*) Obſ. Medic. l. 1. ubi de Cerebri Vuln.

are even ſome of wounds penetrating quite into the ventricles of the brain. Augenius (*r*), and even Galen himſelf (*s*), teſtifying that they had ſeen them: ſo that I cannot help wondering that, in a certain ſcholium of the Sepulchretum (*t*), it is remark'd as "probable, that ſome wonderful wounds of "the head, with an evident injury of the brain, ſome ſmall parts of which "have even been taken away without deſtroying life, were not mortal, be-"cauſe they were found to have affected the ſurface only, the medullary ſub-"ſtance being unhurt; for where this ſubſtance is touch'd, death muſt be "the conſequence."

For if thoſe obſervations had been read, it would have been known, from many of them, not only whether the injury had reach'd to the medullary ſubſtance, but alſo whether a portion of the cortical ſubſtance only was taken away, as in that wound of the cerebellum in Platner. But you may, beſides thoſe, read ſome others that are really wonderful in Martianus (*u*), from whom nobody, that I remember, has yet quoted them; and others, in like manner, in Wepfer (*x*) and Saltzmann (*y*); to omit others at preſent: the latter of which authors, however, like Bohn, after having recounted many cures of large wounds of the cerebrum, has expreſsly excepted wounds of the cerebellum (*z*), "as what experience proves to be always and abſolutely fatal;" and Wepfer finiſhes his in ſuch a manner, that after having mention'd a leaden bullet's having paſs'd through the cerebrum in one perſon, and in another through the cerebellum and cerebrum, he declares the firſt to have died "ſoon after," but the latter "inſtantly."

How much more ſpeedily and more certainly, then, wounds of the cerebellum are generally mortal, than thoſe of the cerebrum, has been ſufficiently confirm'd by us. Now let us go on to our obſervations of the cranium being fiſſur'd or fractur'd.

28. A virgin, of ſeventeen years of age, of a pallid colour, happen'd to be talking with a lover of hers, with whom her father had forbiddeh her to talk, when on a ſudden her father ſurpriz'd them together. As he was a fierce and ſavage kind of man, and not quite ſober, he ſnatch'd up a thick club, wherewith he ſtruck the arm, but particularly the head, of his daughter, with ſuch violence that the club was broken.

In this wounded condition the poor girl was carried, four hours after, into the hoſpital of St. Mary de Morte, at Bologna. She made no anſwer to any queſtion that was aſk'd her; and her pulſe was ſo low, that they did not dare to take away blood. In the arm was one ſlight wound; but in the head were many and conſiderable wounds; and, amongſt theſe, one in particular that was extremely large, and ſeem'd to give her the moſt pain, lay behind the left ear, from which a perfect ſanies afterwards flow'd out: and with this the wounds were a little moiſt.

Within about four days the patient began to make anſwers to the queſtions which were aſk'd her, but very little, for the moſt part; as, for inſtance,

(*r*) L. 9. Epiſt. 2. quæ eſſe deberet 3.
(*s*) De Uſ. Part. l. 8. c. 10.
(*t*) Ad § 8. Obſ. 5. hujus Sect.
(*u*) Annot. ad Hippocr. Epid. l. 7. S. 1. verſ. 377 prope fin.
(*x*) Exerc. de loco aff. in Apopl.
(*y*) Diſſert. de mira Cran. Fract. § 10. & ſeqq.
(*z*) § 12.

either

either to affirm or deny. In the mean while, the pulſe became vehement and frequent; and the fever was obſerv'd to increaſe every day in the evening. Then the menſtrual purgation came on in its proper time, nor ceas'd to flow till the time of her death; which follow'd a few days after, in a gradual and placid manner, after the fever had come on once only, and that three days before death, with a ſhort and ſlight coldneſs.

The body of this virgin was very uſeful to me in the year 1704, together with other bodies, when I was very buſy in examining the genital parts both of virgins and women; in order to inveſtigate thoſe things that I have ſpoken of in the firſt Adverſaria in regard to the hymen, the valves of the cervix uteri, the ſources of the menſtrual blood, and other circumſtances of that kind. Though the menſtrual blood did not ceaſe to flow quite to the time of death, as I have ſaid; yet, as it flow'd much more ſlowly in the latter part of her life, it had coagulated into the form of a thick cylinder, within the vagina and the cervix uteri; juſt as the blood which is receiv'd into a glaſs-veſſel from a vein is wont to do; and ſeem'd to have dilated the oſculum uteri and cervix: unleſs you chuſe to attribute this to the natural laxity of the parts at ſuch a time. Nor was the whitiſh part entirely wanting in that ſanguineous concretion.

But it is more worth while to remark, in a few words, what I obſerv'd particular in the fundus uteri and the teſtes. The anterior ſurface of this fundus was unequal with three or four little furrows, drawn in a longitudinal direction. And the membrane which inveſts the teſtes ſhow'd ſome ſmall cicatrices, as it were; amongſt which, in one of the teſtes, appear'd ſomething ſimilar to a little ulcer, being unequal in its ſurface, and of a yellow colour inclining to blackneſs. Through a foramen which was manifeſt therein, a thin probe was paſs'd down by me into a cell that was not very ſmall, but empty. And the veſicles, which in theſe teſtes were not wanting, but were full of ſerum, being cut into after boiling, ſhow'd not the leaſt of a coagulated humour; and only contain'd, within a thickiſh coat, a ſinus that was perfectly empty. All theſe things, however, were ſeen laſt in order.

But as to the head, which had been already diſſected, all the wounds appear'd of a cineritious and ill-looking colour; and while the integuments were taken off from it, many diſagreeable colours appear'd; and among theſe a black colour. The cranium, when laid bare, ſhow'd the lambdoidal future to be ſomewhat open'd; and at that place behind the ear, in which I have ſaid that the wound was the moſt conſiderable, a large part of the bone was broken; and ſo disjoin'd from the other parts, that it eaſily follow'd the hand which drew it away.

The ſkull being cut through round about, and examin'd both internally and externally, ſhow'd two fiſſures, that penetrated through both tables; the longeſt of which fiſſures began from that place where the large fracture was. And the inferior part of the left hemiſphere of the cerebrum, which anſwer'd to this place, was corrupted to as great an extent as a ſmall apple would have occupied. The other parts we found to be ſound, if you except the dura mater only, which had a kind of ſlight ecchymoſis where it lay under that longeſt fiſſure.

29. Beſides this, and perhaps others, I alſo made, in the ſame hoſpital, that

that diſſection belonging to this claſs, which is already ſufficiently deſcrib'd in the *Epiſtolæ Anatomicæ* (*a*). From which, beſides other things that I have hinted at, in this and the former letter, you will ſee this circumſtance confirm'd in particular; that blood is ſometimes effus'd, not where the ſcull has receiv'd a blow, and been fiſſur'd, but within the part oppoſite thereto.

Now let us go on to ſome diſſections perform'd at Padua, beginning with that in which, like the former, we ſaw the ſcull to be fiſſur'd by the blow of a ſtick.

30. A certain man, who was a native of Genoa, blind of one eye, and liv'd by begging, being drunk, and quarrelling with other drunken beggars, receiv'd two blows by their ſticks; one on his hand, which was ſlight, and another violent one at the left temple; ſo that blood came out of the left ear. Yet ſoon after, the quarrel being made up, he ſat down at the fire with them in the ſame place; and again fill'd himſelf with a great quantity of wine, by way of pledge of friendſhip being renew'd: and not long after, on the very ſame night, he died.

The body was warm even on the day following, although it was in the latter end of January, in the year 1746, when it was brought into the college before night. And as I was teaching anatomy at that time, it was diſſected on the following days; for it was a proper body for the purpoſes of demonſtration; although there was an ulcer at the lower part of the left tibia, and the ſcrotum was tumid, as if from an ecchymoſis; being, at the ſame time, of a red and violet colour, and the belly in particular diſtended.

For when the abdomen was open'd, it was found that the tumour was from the ſtomach, which had been ſo diſtended with wine and air, that I never remember to have ſeen it more ſo; whereas the inteſtines, and eſpecially the ſmall ones, were almoſt empty; ſo that ſome perſons hop'd in vain, as in a man who died ſoon after having drunk ſo much wine, that they ſhould ſee ſome chyliferous veſſels in the inteſtine and meſentery; although in the beginning, while the ſtomach, which was even then full, was rais'd up with the hand towards the left ſide, we moſt of us were impos'd upon by the appearance of a chyl ferous veſſel, that ran parallel to the gaſtro-epiploic veſſels, on the external ſurface of the ſtomach; yet it was immediately perceiv'd, that this was either a nerve, or ſomething elſe of that kind, as it had no appearance of valves, and when diſſected and compreſs'd, gave out not the leaſt moiſture.

The abdomen, the meſentery, and the omentum, which we found to be drawn upwards, were fill'd with a yellow fat. The ſpleen was one of the largeſt I have ſeen, in every dimenſion; but eſpecially in its breadth and length: and in its longitudinal direction it was wrapp'd up into itſelf on its flat ſurface. Internally it was of a dilute and pale red; but no where hard. Nor was the liver hard: large indeed it was, but within natural bounds: and the gall-bladder was full of yellow bile. The urinary bladder alſo was full of urine; ſo as to be prominent above the oſſa pubis by three inches.

The urethra was without our canaliculi, at leaſt as far as appear'd to the eyes; though perhaps from a foregoing diſeaſe. For the glans could not be

(*a*) XIII. n. 16.

diſen-

diſengag'd from the prepuce, in the whole of it, without diſſection. Nor was the part which could be diſengag'd, that wherein the extremity of the urethra opens. Within the ſcrotum was no diſorder. Nor within the thorax: nor any thing worthy of remark therein; except that, in the cavities of the heart, and great veſſels, the blood was free from all polypous concretion, as it alſo was in all the remaining veſſels of this body.

But the head offer'd many things worthy of remark. The muſcles of the face, the membranes which lay betwixt them, and the parotid glands, were ting'd with a kind of bright red colour degenerating into brown. Theſe glands were large; and perhaps from the ſame cauſe, that is, from the blood having ſtagnated there: for the thyroid gland alſo, and particularly the internal maxillary, were enlarg'd: could this have happen'd becauſe in gluttons of this kind, they grow large in conſequence of being more frequently and more violently agitated? The left temporal muſcle, I mean that which had receiv'd the blow, was black in the whole of it, except in that part which is neareſt to the forehead, from the ſtagnating blood that was effus'd betwixt the fibres of the muſcle in ſuch a degree, as to be diſcharg'd to the quantity of ſome ſpoonfuls during the diſſection.

The cranium being ſaw'd open; in which, inſtead of the frontal pituitary ſinuſſes, the ſubſtance of the bone was found to be ſpongy; betwixt that and the dura mater, where it lay beneath the part which had receiv'd the blow, we found blood half-coagulated, to the quantity of two or three ounces; extending from the poſterior part forwards, to the ſpace of four or five inches, and from the baſis of the cranium upwards, almoſt as much. From the compreſſion of this blood, the dura mater, and the brain, had very evidently ſubſided for as great a ſpace as I have ſaid was occupied thereby.

Moreover, the ſanguiferous veſſels in that membrane, and ſtill more thoſe in the pia mater, were ſo diſtended, that even the ſmalleſt ramifications were every where beautifully red, yet moſt on the right ſide; perhaps becauſe the man, when dying, had lain on that ſide in conſequence of its being leſs affected with pain. Or perhaps, as to what relates to the dura mater, becauſe the veſſels of this membrane could not be equally full on the left ſide, as they were on the right, by reaſon of ſo much blood having been effus'd: although, even at the baſis of the right hemiſphere of the cerebrum, betwixt that and the pia mater, we obſerv'd blood to be extravaſated to ſome extent; but in ſo ſmall a quantity, that it ſeem'd rather to be a livid appearance, as if from contuſion, than a real extravaſation.

That there was a like plenitude of the veſſels, in proportion, in the medullary ſubſtance of the cerebrum, and not only there, but in the ſubſtance of the cerebellum alſo, we perceiv'd by the pretty large bloody points, that were ſeen here and there throughout each of theſe ſubſtances; and throughout the parietes of the lateral ventricles we ſaw the veſſels themſelves to be diſtended: although the choroid plexuſſes were pale, in conſequence of a little and ſomewhat turbid water which was contain'd in thoſe ventricles.

Having ſeen theſe things in the manner deſcrib'd, we turn'd our eyes to the cranium, which was cut out; and, in the left temple-bone, we obſerv'd almoſt a capillary fiſſure, but ſuch a one as penetrated from the external to the internal parts. This fiſſure began at the breadth of a little finger, above

that place where the ſcull had been cut into, as it uſually is. It was continu'd to the baſis of the cranium, and extended itſelf quite to the common ſuperior terminations of the internal meatus auditorius and tympanum; for which reaſon the membrane that disjoin'd the one from the other, was broken through: the latter cavity being full of blood, and the former of a bloody appearance.

Having thus found out the cauſes which had ruptur'd the internal and external veſſels, and conſequently the cauſes of blood being effus'd within the cranium, and diſcharg'd from the ear; it remain'd in a man who, as I have ſaid, was blind of one eye, to examine this eye. It was the right eye. The tunica adnata of which was diſtinguiſh'd with a great number of veſſels, going to the circumference of the cornea, and particularly in one part.

The cornea was not only opaque, but alſo much leſs than it ought to be, and not of its uſual figure. The eye being then taken out of the orbit, the globe itſelf appear'd to be conſiderably leſs than is natural: and indeed did not ſtrictly reſemble a ſphere, but rather one of thoſe bodies, which, amongſt us, we call *bottoni* or *buttons*; I mean, thoſe that we make uſe of to keep our clothes together; being depreſs'd on one ſurface, and on the other, protuberating in the manner of a low cone. Yet, as of theſe ſurfaces the former was here anterior, and the latter poſterior, the diameter of the anterior ſurface was much longer than the axis, or a right line drawn from the middle of this ſurface to the middle of the poſterior ſurface.

And having divided this eye, which was hard, into two parts in the direction of that line, and nothing having been diſcharg'd but a humour, which, if it had not been of a blackiſh colour, you would have call'd aqueous, I in vain ſought for the remains of the chryſtalline or vitreous humour; for not the leaſt trace of them remain'd. But under the contracted tunica ſclerotica was the choroides, betwixt the brown colour of which, a bloody one, as there generally is, pretty evidently appear'd here and there; and the uvea alſo was annex'd to the choroides, but not ſound and entire like the choroides; ſo that we could not diſtinguiſh the iris and the corpus ciliare.

Under the choroides univerſally, inſtead of the retina was a thin bony lamella, which; proceeding from the inſertion of the optic nerve, being every where entire, preſerving that figure of the eye which I have deſcrib'd, and comprehending the aqueous humour whereof I ſpoke; extended itſelf quite to the circumference of the cornea, where it adher'd to the uvea more cloſely than in any other part, as I again obſerv'd, even after having macerated the diſſected eye ſix days in water. The pieces of this lamella, which was really bony, I ſtill preſerve carefully by me; ſome of which, being pretty large, may, by their figure, and the adhering portions of the uvea and choroides, gain credit to a circumſtance ſo extremely rare; if not hitherto unſeen by any one; with thoſe who were not preſent at that time.

Thoſe who were then preſent, however, both doctors in medicine, and ſtudents, having ſufficiently examin'd theſe things, and it having appear'd, even from inſpection, that the blindneſs had been of long ſtanding; whatever the cauſe of it might be, which could neither have been enquir'd from the man himſelf, nor yet from others, as they were ignorant of the life of a beggar, who had been born in another country, and had ſpent the greater

part of his life there; it did not ſeem proper to omit enquiring into the ſtate of the optic nerve of that eye, and comparing it with the other which went to the left, that is the ſound eye.

The difference then, betwixt one and the other nerve, was immediately evident to all, even without diſſection. For the left was in the ſtate that the moſt ſound optic nerve generally is. But the other was more depreſs'd, thin, and of a faint fleſh-colour; and in this ſtate it appear'd from that place where it had been join'd with the other, within the cranium, quite to its inſertion into the eye. And indeed in the whole of this tract, in which it was inveſted with the dura mater, when it was cut tranſverſly, it ſeem'd to be the ſection of ſome artery or other, rather than of a nerve; in conſequence of the dura mater being contracted into itſelf, and become thicken'd: and of the tubulus form'd thereby, having its cavity fill'd with a mucous ſubſtance, of the very ſame colour that I juſt now deſcrib'd.

But what appearance it had in the point of conjunction, we could not enquire; as that part had been accidentally injur'd before, in the diſſection of the cerebrum. From that place, however, inwards, to the extent of two inches, not the leaſt difference could be obſerv'd, by any one, betwixt the right and left nerve; for neither of them, like the right below, was ſofter than uſual, of a mucous nature in its ſubſtance, reddiſh in its colour, or extenuated; but both of them ſhow'd an equal firmneſs, thickneſs, and whiteneſs.

31. Although this hiſtory was pretty long, yet it will be ſufficient to tack a ſhort annotation thereto. I would have you, therefore, compare what I have ſaid of the optic nerve of this blind eye, with thoſe remarks that you have in the thirteenth letter (*b*): and you will perceive that all my obſervations of theſe things agree very well with each other; but that this laſt, as far as it relates to the eye itſelf, contains ſomething more remarkable and rare, than the others; I mean, the change of the tunica retina, in every part of it, from a very ſoft and nervous ſubſtance, into a hard and bony plate.

For how rare an appearance this is, you may imagine from hence, that the very learned anatomiſt Haller (*c*) having ſince lit on a circumſtance ſimilar to this of ours, ſays, "I have read of ſome little ſtony particles being "found in the chryſtalline humour; but whether a diſorder of this kind in "the retina has ever been ſeen, I do not know." The changes in the other parts of the eye itſelf, into a bony or a ſtony nature, are alſo rare; though not ſo rare as the former. For do not too readily believe that ſo many have been ſeen as are recounted in a certain collection; unleſs you firſt find them in books, which are, in my opinion, too haſtily pointed out therein.

To me, at leaſt, it happen'd, contrary to my expectation, when I examin'd four or five of thoſe which are in my hands, that I found nothing, or at leaſt nothing to the purpoſe, in the places which are pointed out; except one, which however was improperly referr'd to: and this you will obſerve moreover to belong to the tunica ſclerotica, which was not "found bony" indeed, as is there ſaid, but was found to have a bony ſcale inherent in it; as you will ſee if you inſpect Blaſius, not in book the ſixth, chapter

(*b*) n. 7. & ſeqq. (*c*) Opuſc. Pathol. Obſ. 53.

the eighth; but in part the ſixth, medical obſervation the eighth; whereas, in the eighth table, figure the thirteenth, Gunzius (*d*) has ſaid what kind of bony lamella he had afterwards ſeen "betwixt the laminæ of the cho-"rhoides."

But the celebrated Morand (*e*) had produc'd an example long before; ſo that it ought not to have been omitted in that collection, eſpecially as it was rare, and, as he himſelf ſays, "perhaps the only example" of an offification within the globe of the eye. For, beſides the chryſtalline humour, which was of the conſiſtence of a very hard ſtone, he found a pretty thick little bone betwixt the choroides and the tunica retina, convex poſteriorly, and anteriorly concave. Finally, not to add any thing more of indurations of this kind in the parts of the eye; you will remember what kind of a ſmall bone we found, in the place of the chryſtalline humour, in a woman of whom I have written to you before (*f*).

The other circumſtances in the hiſtory laſt propos'd, which relate to the blow on the head, you ſee it is needleſs to explain again in this place; after what we have ſo often hinted in this and the former letter. But as to the diſcharge of blood from the ear, by what way, and in what manner, it happen'd in this man; you will, of yourſelf, ſufficiently remember, even without my giving any hint, that the ſame thing had happen'd in others likewiſe: that is to ſay, in thoſe whom this letter (*g*), and the thirteenth, in like manner (*h*), make mention of.

32. A porter, who was not yet forty years of age, and of an excellent habit of body, being drunk, fell down as he was walking, and hurt his forehead very much; from whence a conſiderable lividneſs appear'd in that part. He alſo vomited at the time of falling, but no ſymptom appear'd afterwards, beſide one, which was a very conſiderable ſymptom; I mean, that he lay torpid, without taking any thing, and without ſpeaking, except that when the ſurgeons gave him pain by their applications, he then complain'd vehemently, and ſent forth a great cry. In this ſtate, being brought into the hoſpital, he died within the fourth day after the fall, at the time when I was giving anatomical demonſtrations to the ſtudents there; that is, about the beginning of December in the year 1741.

The os frontis, in the part where it had receiv'd the violence, I ſaw to be cleft aſunder with a very long fiſſure, both externally and internally; under which fiſſure was grumous blood within the cranium, but not a great quantity; nor did I find any other appearance, beſides this, which related to the blow. For as to the little bone which I found not very far from the fiſſure, betwixt the dura and pia mater of this man; that this had been form'd there long before that time, you will underſtand from the deſcription thereof, which I have inſerted in the twenty-fifth letter to you (*i*); and that it could by no means be conſider'd as a ſcale, which, having been ſhaken from the internal ſurface of the bone, by the violence of the blow, had in-

(*d*) Progr. de Ozæna Maxill. prope fin.
(*e*) Mem. de l'Acad. R. des Sc. A. 1730.
(*f*) Epiſt. 13. n. 10.
(*g*) n. 25.
(*h*) n. 16.
(*i*) n. 8. initio.

ſinuated itſelf within the meninges, as it had happen'd in that maſon, whoſe diſſection you have in the celebrated Fantonus (*k*).

33. In the ſame hoſpital of Padua, I demonſtrated to my very numerous auditors, among whom was remarkable for his ingenuity, his ſtudy, and his diligence, that eminent man Jacobus de Scopulo; he, who a few years after was transferr'd into the number of the public profeſſors, and who is a very prudent, experienc'd, and eloquent phyſician, if any other is; I ſay, I there demonſtrated what parts had been fractur'd, by falling from on high, in a certain man, about the beginning of April in the year 1740, and in a young man, in like manner, before the end of November, in the year 1742. And although theſe hiſtories relate to the thorax alſo, yet becauſe the head had been very much hurt, I ſhall ſubjoin them here.

34. A man who was employ'd in pruning a high vine, fell headlong upon the ground, which was ſpread over with ſtones. He immediately loſt the power of ſpeech. Some cordial liquor having been pour'd into his mouth, as he lay half-dead, he vomited: and although his pulſe, which had been contracted, diſcover'd itſelf again; yet all the other circumſtances growing worſe, and the excrements both of the inteſtines and bladder being ſpontaneouſly diſcharg'd, death follow'd within four hours after the fall.

The body, from the mouth and noſtrils of which blood was diſcharg'd, was quite rigid; even at the thirtieth hour after death: and not flexible without the greateſt violence. The ſinciput was black from contuſion, in more than one place; but moſt of all in that part where the common boundaries of this region and the forehead are. And indeed we preſently found the os frontis to be fiſſur'd, almoſt through the middle of it; the fiſſure reaching from the external to the internal ſurface, and deſcending, in a direct line, from the ſinciput: after which going through the arch of the orbit of the right eye, not far from the os ethmoides, and having pervaded the whole os frontis in that manner, it at length paſs'd over into that part of the os ſphenoides, through which the optic nerve goes into the orbit: and as you perceive, from this progreſs of the fiſſure, that it could not but go through the pituitary ſinus; you likewiſe perceive how the blood could be diſcharg'd from the noſtrils, as has been ſaid, and from the mouth alſo, by communication thereof with the fauces.

Under the dura mater anteriorly, we found a fluid blood, though not in great quantity; and we alſo found a ſmall quantity of the ſame kind of blood, and indeed, to appearance, mix'd with water in ſome meaſure, in both the lateral ventricles: and as this was fluid, it was leſs to be wonder'd at, that it was found in the third, and even in the paſſage to the fourth ventricle; as it might eaſily flow thither, eſpecially while the body was mov'd.

The thorax being laid open, and the lungs; which (if you except the upper part of the left lobe, that was connected, by a very thin membranous little band, with the pleura) were every where free and unconnected; being ſoft, and found to be collaps'd into themſelves, and altogether ſound; al-

(*k*) De Obſerv. Med. & Anat. Epiſt. 1.

though where they were turn'd towards the back, they were of a red colour, as if from inflammation, as it was to be expected in a man who had died in a ſupine poſture; when they were lifted up with the hands, we ſaw that as much fluid blood was effus'd into both cavities of the thorax, though in ſomewhat larger quantity into the right than the left, as exceeded ſix pints.

In the pericardium was limpid ſerum in very ſmall quantity. We found the trunks of the pulmonary artery and the aorta, and even the heart itſelf, to be almoſt univerſally cover'd with fat; although the man himſelf was not fat: in the ventricles of the heart was but little of a black, and in ſome meaſure grumous, blood; except that at the venous orifice of the right ventricle there was a ſmall polypous concretion. And from hence even the ſtudents could perceive, that what I had ſo often admoniſh'd againſt the vulgar error in regard to the origin of theſe concretions, was true; as it was certain that in a man who had been in very good health, a hydrocele excepted, this coalition could not have been form'd by the ſtagnation of the thicker and more viſcid particles of the blood among the fibrillæ of the valvulæ tricuſpides, till after death, or a little before.

Theſe viſcera being then taken away, and the blood I have ſpoken of being exhauſted, we endeavour'd to find out from what veſſels it was that this fluid had been effus'd into the thorax, and perceiv'd that it was from the intercoſtals; ſome of the upper ribs, on both ſides, being broken not far from the ſpine, in ſuch a manner, that their unequal extremities had pierc'd through the pleura, and were ſomewhat prominent within the thorax. And there was at and about thoſe parts a large blackneſs, as if from contuſion, by reaſon of the blood ſtagnating under the pleura.

When the carcaſe was turn'd upon its belly, and the muſcles of the back remov'd, I not only found blood, which had ſtagnated under theſe muſcles equally, and even in ſomewhat larger quantity, about the ſame ribs, but I alſo ſhow'd a circumſtance which, in one who by falling down had broken the os frontis, was not very eaſily to be underſtood; that is to ſay, beſides the ribs, ſix of the upper vertebræ were ſo broken, that conſiderable pieces of them were wholly divided from their bodies. But what I conjecture upon this affair you will ſee below (*l*). Now, then, you ſee, from the very great injury done to the vertebræ, and conſequently from the injury of the included ſpinal marrow, why the excrements could not be retain'd.

In the belly was no extravaſated fluid; nor did we find any thing of a preternatural appearance, if you except ſome little part of the liver being blackiſh, and a double hydrocele in the ſcrotum alſo: but as I have already ſent you (*m*) a deſcription of this hydrocele, there is no occaſion to repeat it here. And this is the hiſtory of the man.

35. As to the young man; he was about four-and-twenty years of age, of a fat habit of body, and by trade a wool-comber. This young man, like the former, having fall'n from a high place, died within four hours from the fall. Yet this patient could ſpeak a little to thoſe who firſt ran to him on his falling, and aſk'd him queſtions: after that he immediately ceas'd to ſpeak.

(*l*) N. 36. (*m*) Epiſt. 43. n. 25.

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The limbs of the carcaſe were rigid at the end of two days after death; but after the third they became flexile. The ſinciput, on the left ſide, together with a part of the temporal muſcle, had a livid appearance, as if from contuſion. While the cranium was cut open, a conſiderable quantity of blood flow'd out. And yet we ſoon after ſaw, that as much of the ſame fluid remain'd betwixt the cranium and the dura mater, as might be equal to the weight of three or four ounces. This blood was black, and form'd into coagula; but in no other place than in the left ſide, below the os ſincipitis, and at the baſis of the cranium. Therefore, although a conſiderable quantity of ſerum was found in the lateral ventricles, I ſaw ſome of it to be turbid indeed, but not at all bloody. Nor were the plexus choroides very red: yet the veſſels in the meninges were very turgid. Having obſerv'd theſe things; nor was there any thing elſe preternatural within the cranium; upon inſpecting the cranium itſelf, and tracing on the fiſſure, which I had ſeen beginning in the left os ſincipitis, I perceiv'd it to go through the ſubjected os temporum quite to the petrous proceſs: and from thence we perceiv'd the ſame, or if another, join'd with the former, to be carried through that part of the os ſphenoides which lies betwixt the os temporum and os frontis; being produc'd from hence, where the percuſſion had been given, into that laſt region of the os frontis which makes the extreme part of the arch of the orbit of the eye. And this very long fiſſure was carried through the whole thickneſs of the bones; ſo that, if with one hand you laid hold of the anterior part, and with the other the poſterior part, of thoſe bones that I have mention'd, and drew them aſunder, you would evidently perceive that they gave way, and were moveable.

The bony parietes of the thorax alſo were not free from fractures. For, beſides that the left clavicle was broken, we obſerv'd a lividneſs in the back, which lay near to the ſpine, on the left ſide in like manner, taking up in ſome places a more narrow, and in other places a more extenſive, tract: and upon opening the cheſt, and exhauſting the blood, which was found to be extravaſated to the quantity of two or three ounces in the cavity of the ſame left ſide, we ſaw a large ecchymoſis under the pleura; and in this tumour one, at leaſt, of the ribs which are about the middle of the length of the thorax, ſo evidently broken, in the part where they begin to be curv'd poſteriorly, that the adhering intercoſtal veſſels, together with the pleura, could not but be lacerated, and pour out their blood, both internally and externally. However, the lungs, which we ſeldom ſee in wool-combers, were entirely free from the pleura; except that the upper and anterior part of the right lobe, only, was connected therewith by a ſmall membrane. In the pericardium was no great quantity of ſerum: in the heart no polypous concretions were obſerv'd.

The abdomen being open'd, nothing was found to be in a diſeas'd ſtate but the ureters, which were not only preternaturally widen'd in other parts, but even at their very entrance into the bladder; ſo that it was leſs ſurprizing that the bladder, which we had taken care to fill with air, ſhould ſhow an almoſt equal diſtention in the upper and in the lower part.

36. For frequently, as has been already ſhown (*n*), a diſtended ſtate of the

(*n*) Epiſt. 42. n. 23.

ureters

ureters is the conſequence of a great quantity of urine being long confin'd in the bladder; from whence it eaſily happens that this receptacle is relax'd, and that the figure of it is alter'd in conſequence of this relaxation.

But to return to the bones which were fractur'd in this young man: as all the fractures appear'd to be on the left ſide, it is very eaſily conceiv'd, in reſpect to this patient, though with difficulty in the man (*o*), how the bones of the head and thorax were broken at the ſame time; as the body of this young man fell on its left ſide; whereas we muſt ſuppoſe that the man had met with ſome hard body in falling, whereby his head being fractur'd in the anterior part, and the direction of his body being chang'd, he might at length daſh his back againſt the ground.

However, among other fiſſures of the cranium, this laſt, in particular, was found to be of ſuch a length, and in ſuch a ſituation, that you may compare it with thoſe which are deſcrib'd by Ruyſch (*p*), by Poupart (*q*), by Mauchartus (*r*), by Schreiberus (*s*), and by others; ſo that it always appears, more and more, that the ſutures and commiſſures of the ſkull were not made particularly for the purpoſe of reſtraining the progreſs of fiſſures, and preventing them from being produc'd into more than one bone.

And this I remember was firſt obſerv'd by me at Bologna, in the year 1702, in a body publicly diſſected; the cranium of which had, in conſequence of a blow upon one ſide, a fiſſure parallel to the coronal ſuture, but much larger than that; as it ran behind it through almoſt the whole cranium, except the baſis, and pervaded both the tables. And this obſervation, if I had then written down the other circumſtances, I certainly ſhould not have omitted among thoſe above.

37. Before we ceaſe to ſpeak of blows of the ſkull, I muſt not omit to ſay, that, when both of its tables are altogether unhurt, and the veſſels of the meninges below are unhurt alſo, it ſometimes happens, that the ſmall veſſels which go to the medulla, betwixt thoſe tables, are broken, and pour out their blood; which, in proceſs of time, being corrupted, and become more acrid; for this reaſon, that the "medullary juice," as is obſerv'd by the celebrated Nicolaus Roſen (*t*), is mix'd with it, and at that time, "by its "ſtagnation and heat, degenerates into the worſt kind of rancidity;" affects the internal table with a caries: and while the man has now forgotten the blow, and fears nothing of this kind, flows internally, vitiates the meninges, and brings on death.

More than one example of this kind is known to me and to others, and was known to the authors quoted by Bohn (*u*); as, for inſtance, to Jo. Peter Paſſerius, and to him, in particular, from whoſe commentaries on Hippocrates *De Capitis Vulneribus* I wonder that no diſſection of the head is tranſferr'd into this part of the Sepulchretum; I mean Peter Paaw. And it even ſometimes happens that both the tables are deſtroy'd from that cauſe; as was,

(*o*) N. 34.

(*p*) Obſ. Anat. Chir. 47.

(*q*) Hiſt. de l'Acad. R. des Sc. A. 1700. Obſ. Anat. 19.

(*r*) Eph. N. C. Cent. 5. Obſ. 32. & Cent. 9. Obſ. 39. in Sutore.

(*s*) Nov. Comm. Imp. Acad. Sc. Petropol. Tom. 3. in Phyſi. Obſ. 3.

(*t*) Differt. de Oſſib. Calvar. P. 1. § 1. not. *f*.

(*u*) Differt. de Trepanat. Difficult. prope finem.

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in particular, ſeen by the chevalier whom I have already ſpoken of, Pius Nicolaus Garellius, one of the phyſicians to the Imperial court. The caſe is, at leaſt, worthy of your attention, when couch'd in a few words; for which reaſon, I will in ſome meaſure contract it, from the account he ſent to me by letter, and give it you here.

38. A woman, falling backwards upon ſtone ſtairs, receiv'd a violent blow upon the hinder part of her head; but, beſides a ſhort and ſlight ſtupor, which did not prevent her from returning home ſoon after by herſelf, and a ſmall blackneſs in the contus'd part, which ſoon diſappear'd, ſhe ſeem'd to ſuffer no inconvenience from her fall at that time. At length, after ſome months, a tumour, not bigger than a filbert, appear'd in the part of her head which had receiv'd the blow: but this tumour, as it gave her no pain, was neglected by the woman, and grew larger by degrees, till, at the expiration of the third year, or thereabout, it became very large: at which time it was miſtaken, by certain ſurgeons, for an encyſted ſubcutaneous tumour, as it had neither chang'd the colour of the ſkin, nor gave any pain when it was preſs'd; and would have been cut out by them as ſuch, if the woman had not refus'd to ſuffer the operation.

A little after, the patient began to have excruciating pains, which, beginning from the ſeat of the tumour, were ſo extended through almoſt the whole cranium, that to herſelf it ſeem'd to be bound hard with cords. Theſe pains, indeed, were not continual, nor always equally violent; yet ſometimes to ſuch a degree as to bring on a ſlight delirium: and the longer they continu'd, the more frequent and violent they became. In this manner ſhe went on to the ſixth year. And no ſooner was this year elaps'd, but behold! an apoplexy ſuddenly came on, and within a few hours kill'd the woman: this happen'd at Vienna in the year 1735.

The tumour being open'd, the cavity of it was found almoſt full of black blood; and not only concreted, but ſo denſe, that being laid hold of with the fingers, the whole of it immediately follow'd; ſome portion of fluid blood being diſcharg'd at laſt. This diſeaſe, when the integuments were taken off, was found to begin from the part which had been formerly ſtruck; that is, from the upper part of the os occipitis at the left ſide, and to be continu'd through the os ſincipitis of the ſame ſide, ſo far as to be no more than three inches diſtant from the coronal future.

It occupied, moreover, a part of the right ſinciput; ſo that the whole of the caries extended itſelf ſix inches in breadth, and more than ſeven in length. Where the bones were not entirely pierc'd through, the ſubſtance of the bone appear'd reticular; and from the external ſurface of this reticular ſubſtance bony lamellæ were rais'd up here and there, moſt of them being thin like paper, but all of them very hard and acute: and hereby was form'd a beautiful appearance, as they reſembl'd a kind of foliated funguſſes, of different ſizes, which had ariſen by a kind of bony vegetation.

The dura mater was become very thick in the whole of that ſpace where it lay beneath the diſeas'd cranium, and adher'd much more cloſely than uſual to the part of it which had formerly receiv'd the blow. The veſſels that crept through this membrane preſerv'd their natural bounds on the right ſide, but on the left were very turgid, and much dilated; and the traces of them

were

were ſeen to be much larger and deeper (in the ſound part of the ſkull which remain'd) on the ſame ſide, than on the right ſide. As to what remains, the veſſels of the plexus choroides were alſo much diſtended with blood: and ſome portion of ſerum was found to be effus'd under the baſis of the cerebrum.

39. However, Garellius was of opinion, that the ſmall arteries, not only betwixt the tables of the cranium, but alſo betwixt other bones, are, by the injury and compreſſion occaſion'd from blows, dilated and diſtended into aneuriſms: and that theſe aneuriſms produce a caries even before they are ruptur'd, as other aneuriſms which lie near to bones do; or that they produce this caries ſometimes after they are ruptur'd. And he had been brought into this opinion by obſerving three thigh-bones, which he preſerv'd together with the cranium deſcrib'd. One of which thigh-bones ſhow'd a tumour that it had been dilated into, of the bigneſs of a man's fiſt, corroded and perforated with a caries in ſeveral places, and ſending forth three bony productions, the largeſt of which was equal to a finger in length and thickneſs; and it ſhow'd, at the ſame time, the foramen through which the artery enter'd the bone, and which is very narrow in other bones, to be ſo much enlarg'd in that as very eaſily to admit the little finger.

The two other bones, beſides the fracture which had formerly preceded, and was conſolidated, had a tumour affected with a caries, and the foramen, which was hollow'd out in the bone for the artery, in like manner dilated. He, therefore, thought that this ſpecies of diſeaſe was not yet illuſtrated and explain'd as much as it deſerv'd.

Thus far from his letters to me. But you may compare, in ſome meaſure, the tumour which he ſaw in that woman; on account of its ſituation, its very long-continu'd and violent pains, by reaſon of the included blood, and the part of the cranium beneath being rough with ſharp bony prominences; with that which is made mention of from the Engliſh Philoſophical Tranſactions, in that diſſertation (*x*) which I have already commended, and which was publiſh'd under the auſpices of the celebrated Kulmus in the year 1732.

In regard, however, to the external cauſe, and the ſlow beginning of the tumour after the blow; and in regard to no pain being felt for a long time, but afterwards a very ſevere one, though not continual; and in regard to the caries of the cranium, and the conſiderable hiatus; you may, in great part, compare it with that which we find taken notice of, in another woman, by Jo. Saltzmann (*y*).

40. As thoſe wounds which are inflicted on the face belong alſo to the head, when taken in a general ſenſe; I thought it would be proper to add ſomething in this place upon wounds of the eyes, noſe, lips, and orbits. And of thoſe which are not ſo much wounds of the eyes, as of the orbits and of the cerebrum, we have treated in the preceeding letter.

To which you may alſo add thoſe that, after paſſing through the whole cavity of the orbit, have ſometimes in men gone through the foramina and ultimate parietes of this cavity to the brain, and always in thoſe ſheep which

(*x*) De Exoſt. Steat. Clavic. c. 2. § 22. (*y*) Act. N. C. Tom. 2. Obſ. 100.

Wepfer

Wepfer (z) ſaw, at Rome, to be univerſally depriv'd of all ſenſe and motion as ſoon as ever the butcher had plung'd his knife, quite up to the handle, into one of their eyes: which Wepfer "ſuppos'd, without doubt, to have "happen'd in conſequence of the carotid arteries being cut through near to "the infundibulum, all the ventricles remaining ſound:" although, if he had diſſected the heads of the creatures ſlain in this manner, as it was natural to do, he would, perhaps, have found one of the ventricles wounded in ſome of them.

And as to wounds of the eye itſelf by which the humours are diſcharg'd, if the aqueous only be effus'd indeed, and no part is prick'd or incis'd but the cornea tunica; Ariſtotle (a), Celſus (b), and Pliny (c), had declar'd that there was reaſon to hope for a happy cure, from the examples of ſwallows, of pigeons, of doves, of green lizards, and of weazels likewiſe, before the followers of Galen confirm'd it in men, and in other animals alſo, after the obſervation of Galen (d) on a boy.

But when the vitreous humour, and ſtill more when the chryſtalline, is effus'd, can the eye ſee properly as before? This is what thoſe believe with difficulty who, extracting theſe humours through the cornea, have obſerv'd that the iris and corpus ciliare are injur'd; though the entire ſtate of both theſe parts is neceſſary to make viſion perfect: not to ſay any thing of the retina, without which we cannot ſee at all, and which, when the vitreous humour is taken away, collapſes into itſelf, or at leaſt is corrugated.

Yet ſuppoſe that the aqueous humour, being again collected in its proper ſituation, is alſo collected in ſome of the remaining cells of the vitreous humour, and that thereby theſe cells, and any thing that was compreſs'd within them, are diſtended, and the retina conſequently unfolded to its full extent; will the chryſtalline humour, which had fall'n out by a wound improperly made, together with the vitreous, be generated afreſh? this humour, the want of which is never ſupplied after being depreſs'd by a ſkilful ſurgeon, and which is ſo extremely neceſſary to viſion, as they who have had it depreſs'd very well know?

And, indeed, it appears from that ſcholium of Elſenerus (e), that thoſe who made no doubt of the vitreous humour being reſtor'd, unanimouſly deſpair'd of the reſtitution of the chryſtalline: yet in this ſcholium he takes notice of one who was ſuppos'd to have reſtor'd all the humours of the eye, after being preſs'd out, and viſion itſelf to its perfect and natural ſtate; and produces a certain teſtimony of Thomas Bartholin, of the ſame experiment of Burrhus; which he would not have produc'd if he could then have read what the ſame author Bartholin (f) ſaid a few years afterwards; not in private letters, or in a brief manner, but in a public writing and at large; of the ſucceſs of one experiment of this kind, and no more, which he had ſeen; and that a doubtful and imperfect ſucceſs.

Nor, indeed, has the ſurgeon Scriverius (g); he who, in writing to Bartholin of the humours of the eye being preſs'd out by Burrhus, and by him-

(z) Exerc. de loc. aff. in Apopl.
(a) Hiſt. Animal. l. 6. c. 5.
(b) De Medic. l. 6. c. 6. n. 39.
(c) Nat. Hiſt. l. 29. c. ult.
(d) De Sympt. Cauſ. l. 1. c. 2.
(e) Ad Obſ. 12. Dec. 1. A. 1. Eph. N. C.
(f) Act. Med. Hafn. A. 1672. Obſ. 132.
(g) Ibid Obſ. 133.

ſelf alſo, in a gooſe, and reſtor'd, denied " that it was doubtful to him " whether the ſame thing happen'd in all other flying creatures;" affirm'd that ſight was perfectly reſtor'd, but " in part, and not with equal ſucceſs," either in the gooſe, or in the cock and the hen on which he made the experiment.

Yet, in the laſt-mention'd creature, he ſays that the chryſtalline humour had been regenerated within eight weeks; but that it had not then come to its proper ſize: and notwithſtanding he adds, " If the creature had been " ſtill preſerv'd for ſome weeks longer, there is no doubt but it might have been perfectly reſtor'd," yet he leaves the readers in doubt; as he did not afterwards repeat the experiment, which was of ſo eaſy a kind, in order to continue it for a longer time.

And even Zambeccarius (*b*), having formerly affirm'd, that as the regeneration of the aqueous humour is (which he confeſſes) the mere work of nature, ſo " the regeneration and reſtitution of the vitreous and chryſtalline " humour " is the work of the ſame nature alſo; " but what happen'd from " a regeneration of this kind he would tell us at another time;" never publiſh'd any thing afterwards upon this ſubject, that I know of, although he liv'd for a very long time.

And I even know that he anſwer'd the enquiries of Sancaſſanus, who wrote to him on that ſubject in the year 1724, by ſaying that, ſince the time he had written theſe things, he had not found opportunity to make the experiment: yet he believ'd that theſe two humours may be generated afreſh, but more ſlowly than the aqueous: and he believ'd this, not only becauſe it was certain from Benevoli, that where the chryſtalline humour had been depreſs'd with a needle, on account of its opacity, in them the vitreous humour came forwards to ſupply its place; but alſo becauſe theſe two humours are nouriſh'd, and nutrition is generation; wherefore, as they were nouriſh'd, ſo they may again be generated. And this I have quoted, that you may perceive what might have been expected from him.

Finally, Theodorus Kerckringius (*i*) having expreſsly affirm'd, that he " would make an inciſion into the eye of any animal whatever that ſhould " be offer'd to him, preſs out all the humours, and even give them " to the ſpectators to be taken away, and in a little time reſtore the ſight " entirely: and that this he had done ſometimes ſo far, for the ſake of ex- " periment, that in one and the ſame dog he cut into one and the ſame eye " three times, and three times made a cure of it:" I aſk of you, if, when *all* the humours were really preſs'd out, the ſight was really *entirely* reſtor'd; I aſk, I ſay, of you, what you ſuppoſe the reaſon to be, why, although other tranſactions of that induſtrious anatomiſt are ſtill taken notice of, this one very great thing alone has been ſo buried in ſilence for a long time paſt, that the memory of it has been in a meaſure loſt, and no mention made of it now, even by the moſt learned men, in recounting the experiments of others that relate to this ſubject?

41. But to wounds of the noſe belong ſome of thoſe ſurprizing caſes which are ſuppos'd to have related to the brain; as that which it is ſaid in Wepfer (*k*), was inflicted upon a Poliſh knight, by an arrow being driven

(*b*) Experim. circa diverſa e viv. exect. Viſcera.
(*i*) Spicileg. Anat. Obſ. 100.
(*k*) Exercit. ſupra ad n. 40. cit.

from one ſide of the head to the other in ſuch a manner, as to ſtand out equally on both ſides. For as it was forc'd in " below the temple bones, " towards the prominence of the oſſa jugalia on each ſide;" and as the knight, " beſides the ſymptomatic fever, had ſcarcely any more violent " ſymptoms, than what generally attend wounded patients of every kind;" to me, I confeſs, the arrow ſeems to have paſs'd not only below the baſis of the cranium, but through the cavities of the maxillary ſinuſſes, and of the noſe.

And I ſuppoſe that wound alſo, which Freind (*l*) gives the account of from Procopius, to have related to the ſinuſſes which belong to the cavity of the noſe, in like manner; though to different ſinuſſes from the former. For " the iron point of the arrow, entering above the right eye, near to the " naſal bone, however large and long it was, ſunk in ſo deep as to be quite " out of ſight," and continu'd there many years without creating any pain or uneaſineſs; I ſuppoſe of ſuch a kind as ſhow'd the arrow's point to have been ſituated in a more noble part.

For the frontal ſinus excepted, and the neighbouring ethmoidæal and ſphenoidæal ſinuſſes, it might have room enough, eſpecially in a large head, where it could lie hid, without any injury to the more noble parts; although it equall'd the little finger in length, and indeed almoſt in thickneſs. So alſo when Hildanus (*m*) very properly explain'd how it happen'd, that a wound beginning under the eye, and ending in the oppoſite and upper region of the neck was not mortal; and ſuppos'd the firſt part of the paſſage of the wounding inſtrument, to have been through the maxillary ſinus; this wound in like manner, in that reſpect at leaſt, belong'd to the noſe.

And I even ſaw a wound of this kind at Bologna, which was of itſelf large, but to appearance extremely large: as therein were concern'd not only both theſe ſinuſſes, the external noſe, and the bones which lay beneath, but it had even laid open their cavities, and ſmear'd them over with blood; ſo that the natural deepneſs of theſe cavities, being added to the great opening of the wound thus inflicted, offer'd a horrible ſpectacle to the eye.

For an iron tube, which in our language we call *archibuſo* (a little muſquet or hand-gun) having burſt into pieces, in conſequence of being overcharg'd with powder, it took away from the face of a boy his noſe, and ſo much of both the maxillary bones, that both the maxillary ſinuſſes, together with the cavities of the noſe, were laid open; which appear'd ſo much the larger alſo, for this reaſon, that part of both thoſe bones, which are interpos'd betwixt the noſe and the mouth, was partly conſum'd anteriorly, and hung down partly, in conſequence of being broken; ſo that it was neceſſary to put a tube of lead betwixt them and the lower jaw, by which the boy might breathe and be nouriſh'd, till the broken part became whole, and the ſeveral dreſſings could be wholly remov'd from the cavities of the noſe.

This boy was preſerv'd by the diligence of Paul Piella, a very experienc'd phyſician and ſurgeon: whom I ſaw to be at firſt ſtruck with horror, as well as the others who ſtood around him, and to turn away from ſo unuſual and miſerable a ſpectacle, when his bloody face was uncover'd on being

(*l*) Hiſt. Medic. ad A. 560. (*m*) Cent. 4. Obſ. Chir. 2.

brought into the hoſpital, immediately after receiving the wound; ſo large and ſo deep did it appear at firſt ſight; though ſoon after, by examining it more attentively, and by comparing it with the natural ſtructure and diſpoſition of the parts, as known from anatomy, we perceiv'd it to be very conſiderable indeed, and large, but to be much leſs deep in reality, than it was in appearance.

42. And I remember this of a wounded lip. Another boy of almoſt the ſame age; that is to ſay, of twelve years of age, but of a moſt noble family; having fall'n on his face in running, and broken one of his upper dentes inciſorii tranſverſly againſt the marble pavement, his upper lip was cut through by that part of the tooth which had been broken off. And now, by the attention and care of the ſurgeons, that part of the lip which lay about the wound had decreas'd in its ſwelling, and become ſofter: yet neither orifice of the wound inclin'd to agglutination; nay, a very flaccid and moiſt fleſh, which lay in the wound, was an abſolute bar to ſuch a diſpoſition.

We ſuſpected that ſomething extraneous was lodg'd within: but what really did lodge therein never enter'd into any one's thoughts, ſince not only the patient, but all the domeſtics, had believ'd, themſelves, for a certainty, and had affirm'd it to me and to the ſurgeons, from the very beginning of our attendance, that the part of the tooth which had been broken off, as it had made the external orifice of the wound, had alſo fall'n out at that orifice.

Yet that very part of the tooth was, in fact, buried within the wound: and this being eaſily extracted, the wound was in a little time, and without any difficulty, brought to a cicatrix. And from hence you will learn, that, in examinations of this kind, we muſt not pay a regard to the narration of any one, (even when the moſt probable) unleſs of thoſe who aſſert that they clearly ſaw the circumſtance with their own eyes.

43. And I could wiſh, that as this boy afterwards grew to be a young man, and now flouriſhes among the nobles of his famous city; ſo another alſo, born in a place not inferior, had not, after having recover'd from his wound alſo, been ſnatch'd from a very noble family, by a much more grievous kind of diſorder. This boy was three years old, when, being at play, he fell down, and daſhing his chin againſt a marble ſtep, ſo compreſs'd his tongue (which happen'd at that time to be thruſt out) betwixt his teeth, as to cut it; and with an oblique wound, at leaſt an inch in length: nor at a much leſs diſtance from the lower point of the apex, divided that anterior part of the tongue from the other entirely, for as large a tract as from the edge laterally to the middle line.

The parents of the child, and all the relations, were very much affected with the misfortune, and enquir'd of me by letter; but particularly a great-uncle of the child, who was a man eminent for his learning; not by what kind of remedy he could now be cur'd; for by reaſon of his age he was obſtinately repugnant to all kinds of remedies, and ſhut his teeth againſt every thing; and to compel him, by violence, to ſubmit to any method of cure was improper, by reaſon of the fever, and the tumour of the tongue, both of which had come on: but this one thing they enquir'd, which was the only one that remain'd for their comfort, whether there was any hope that, if he were left to the care of nature alone, he might ſpeak properly and expeditiouſly.

I imme-

I immediately wrote back that they need not deſpair; and produc'd many examples to that effect: eſpecially a caſe very ſimilar thereto, which is extant in Hildanus (*n*). The event alſo, by the bleſſing of God, was very ſimilar: ſo that I heard, when I happen'd to be at Venice in the following year, that "the ſpeech" of the child, to uſe the very words of Hildanus, "was not "at all deprav'd;" nor was it injur'd through the whole of his life-time, which was but ſhort; for he was ſoon after carried off by a malignant kind of ſmall-pox.

And what you will think ſtill more ſurprizing, although he ſpoke properly and expeditiouſly, yet thoſe parts of the tongue which had been disjoin'd by the wound, were not coaleſc'd to each other, but each of them had its own proper cicatrix: for which reaſon that anterior part was ſeen, even at this time, juſt as immediately after the wound, to be disjoin'd from the other, and pendulous. Thus far of wounds of the head. Farewel.

LETTER the FIFTY-THIRD

Treats of Wounds and Blows of the Neck, Breaſt, and Back.

1. ALTHOUGH in this third ſection (*a*), in which alone the author of the Sepulchretum would have blows and wounds of all the parts comprehended, ſome things are now and then repeated; as, for inſtance, the firſt article of the twentieth obſervation, in the firſt article of the twenty-ſecond; and the fourth article of the twenty-firſt, in the eighth article of the ſame, and in the fifth article betwixt the ſeventh and eighth; and what is in the ſcholium to article the firſt of the twenty-fourth obſervation, in the ſcholium to article the fourth of the ſame obſervation; and although you will now and then think the diſpoſition and order of the matters is ſomewhat deficient; yet there is much more irregularity in the additamenta which are join'd to this ſection. For beſides that the twenty-ſixth obſervation, which has no relation to blows or wounds, is thruſt in here, and takes up, together with its ſcholia, ten large pages; and beſides that under article the firſt of the tenth obſervation, and in obſervations the twentieth and twenty-firſt, the ſame hiſtories of Parey and Bartholin are again produc'd, which had been already given above in this very ſection, under obſervation the twenty-third, article the ſeventeenth, and fourth, and under obſervation the twenty-ſixth, article the eighth; beſides theſe things, I ſay, without any the leaſt

(*n*) Cent. 1. Obſ. Chir. 28. (*a*) l. 4.

regard

regard being had to order, they paſs over from a wound of the breaſt to a wound of the tibia; and among the wounds of the breaſt, both wounds of the head and belly are indiſcriminately interpos'd.

I, however, am determin'd not to repeat any thing in theſe letters, and to preſerve order and regularity. Wherefore, as I wrote laſt of wounds, and blows of the head, I ſhall now treat of the wounds of the neighbouring parts, neck, breaſt, and back. And becauſe the obſervations made by Valſalva, and by me, are not ſo numerous as to exceed the bounds of one letter; I will, according to my cuſtom, propoſe both of them in the preſent, and begin with his obſervations.

2. A woman, of fifty years of age, being wounded, with a cutting inſtrument, in the neck, fell down; and could no longer move her hands or feet. After ſome days, ſhe mov'd her hands again, but not with their former vigour. A ſlight delirium came on; and, finally, before the ſeventh day ſhe died.

As the body was buried privately, the opinion, of the ſpinal marrow being injur'd, could not be confirm'd by diſſection. Yet this ſeem'd ſo probable from the paralyſis of the limbs, from the ſeat of the wound, and from the ſmall fragments of bone which had come out therefrom, that I did not think this obſervation ought to be entirely omitted here.

3. A man, of five-and-thirty years of age, of a bilious temperament, being, in the month of November, in the year 1688, wounded, with a knife, at the middle of the ſternum, betwixt the fifth and ſixth rib, was immediately ſeiz'd with a great loſs of ſtrength; ſo that, as the pulſe could ſcarcely be perceiv'd, the phyſicians thought he would die in a very ſhort time. Yet, after three hours had paſs'd, his ſtrength began to return by degrees: he was therefore brought into the hoſpital of St. Mary de Vita. On the following day he was troubled with a terrible cough, and with a diarrhæa alſo. But the latter was very urgent, although ſcarcely any thing beſides a little viſcid matter, was diſcharg'd thereby: and on the ſixth day it ceas'd.

Yet the cough was ſo encreas'd every day, that it could ſcarcely be borne. From the firſt days alſo, there was a ſenſe of a very great weight in the belly, which, in the progreſs of the diſorder, extended itſelf through the whole abdomen: there was none, however, in the thorax. On the firſt days, alſo, the pulſe was ſomething turgid, and moderately quick; which quickneſs it even preſerv'd afterwards: but growing ſmaller and ſmaller every day, it at length fail'd gradually on the eighth day, together with life.

In the body, at the firſt inciſion on the right ſide of the ſternum, the blood, wherewith that cavity of the thorax was fill'd, ruſh'd forth with great impetus. And when the ſternum was taken away, and the blood exhauſted with ſponges, freſh blood again flow'd through the diaphragm, which was wounded, from the belly, into the ſame cavity of the thorax.

For this reaſon, it was neceſſary to open the belly alſo immediately, and to exhauſt the blood, which was extravaſated into that cavity: the concreted fibres of which blood, being diſpos'd throughout the external coat of the inteſtines, in the form of a net, adher'd to this coat in ſuch a manner, that they could be ſeparated by the knife only. Wherefore, when all the blood

was

was remov'd, and the viſcera brought into view, we return'd to examine the wound. The mediaſtinum, which was the firſt part that correſponded to the wound, was wounded: after that the pericardium: and, finally, the paries of the right ventricle of the heart, ſo that the fiſſure of the wound open'd within that ventricle; and when the ventricle was compreſs'd, a little blood was diſcharg'd from it through the fiſſure. But the next to the wound of the mediaſtinum was the wound of the diaphragm; through which blood, as has been ſaid above, flow'd out of one cavity into the other.

4. Since the time in which Galen (*b*) ſaid, that if a wound penetrates to the ventricle of the heart, "the man muſt immediatly die;" and if it did not penetrate, "that ſome might not only live through the day, on which "they were wounded, but alſo through the following night;" diſſections of dead bodies have ſhewn, that the contrary frequently happens: many of which, indeed, you have in the Sepulchretum, but not all. For there are ſome extant which may be added, and not only from books that have been publiſh'd ſince; as, for inſtance, thoſe that are produc'd in more than one volume of the Royal Acadamy of Sciences at Paris (*c*); but alſo much more ancient ones, as that which was made by our Falloppius (*d*): from whence it appears, that whether a wound, as in this obſervation of Falloppius, does not penetrate through the parietes of the ventricle, or, as in the former, reaches quite into that cavity, life may be ſometimes prolong'd to a greater length of time than the more ancient authors ſuppos'd.

The obſervation of Valſalva, when compar'd with the others, is not in the number of thoſe, wherein life was dragg'd on to the greateſt length of time; nor yet in the number of thoſe, wherein it continu'd the ſhorteſt time. But it contains, in reſpect to the wound of the diaphragm, wherewith the other was complicated, ſome things worthy of remark; from whence phyſicians may draw ſome advantage in forming a diagnoſis.

For when there are ſigns of the heart being wounded, and of the blood being pour'd out therefrom, if there be no ſenſe of weight in the thorax, and there not only is ſuch a ſenſation in the belly, but it is increas'd every day, there will be room for a conjecture of the diaphragm being ſo wounded, as to tranſmit blood from the thorax into the belly; eſpecially, where ſome one of the ſymptoms which confirm this ſeptum to be wounded, is not wanting: of which kind was that very troubleſome cough in the patient in queſtion, that was ſo violent as ſcarcely to be borne. Which ſymptom, although omitted by ſome, is at leaſt not paſs'd over by that excellent ſurgeon Falloppius (*e*).

Do not, however, be ſurpris'd, that it is not taken notice of in the next obſervation. For all the ſymptoms of any diſorder do not always occur; on which account, that will have other things, which we do not read of in this obſervation. Beſides, obſervers frequently make remarks only upon the principal ſymptoms.

(*b*) De Loc. aff. l. 5. c. 2.
(*c*) Hiſt. A. 1735. Obſ. Anat. 9. & A. 1744. Obſ. Anat. 9. &c.
(*d*) Tract. de Vulnerib. c. 28.
(*e*) eod. c. 28.

Finally,

Finally, in proportion to the various ſtate, or ſituation, of the wound in the ſame part, different ſymptoms will offer themſelves at different times. And although in this, and the following obſervation, we may, in ſome meaſure, conjecture what was the ſeat of the wound, from the other circumſtances that are added; yet it were to be wiſh'd, that in deſcribing this ſeat, and even the whole paſſage of the wound, nothing had been paſs'd over by Valſalva, which could be wiſh'd for by any one: and even that, in the beginning of this firſt hiſtory, he had expreſsly ſaid what he ſeems to have intended; I mean, that the knife was ſo drawn in betwixt the fifth and ſixth rib, as to aſcend towards the middle of the ſternum.

5. An old man, of ſeventy years of age, who had been blind about twenty years, fell down, and daſh'd the left ſide of his cheſt againſt a flint with ſuch violence as to break his ribs. He was receiv'd into the ſame hoſpital. His pulſe was hard; he had an oppreſſive and pricking pain in the wounded part; his reſpiration was very difficult. And although this difficulty began to remit a little about the fourth day; yet, on the beginning of the ſixth day, it again became more violent; and with it a delirium came on. All thoſe ſymptoms continuing, the patient died about the ninth day.

The left cavity of the thorax was full of extravaſated blood: and the true ribs, of the ſame ſide, except the uppermoſt, were all broken in ſuch a manner, that the ſeventh had wounded the diaphragm by its rough and unequal fracture; and this muſcle was univerſally inflam'd round about the wound.

As to the blindneſs; in what manner Valſalva found both the chryſtalline humours to be affected, I have written in the eighteenth of the Epiſtolæ Anatomicæ (*f*).

6. Here you have another example of the diaphragm being wounded, and of blood being effus'd internally. But there is no mention made of a cough, or of a weight in the belly; only of an oppreſſive and pricking pain in the thorax, of a very difficult reſpiration, and a delirium. Suppoſe the wound, in this caſe, not to have been in the tendinous part of the diaphragm, but, as is moſt probable, in the fleſhy; and that it did not open into the belly, ſo as to be capable of tranſmitting thither the blood effus'd from the intercoſtal veſſels, which were broken aſunder, together with the ribs, but to have conſiſted in the upper fleſhy faſciculi being prick'd and lacerated, every now and then, by the rough points of the broken rib, and for that reaſon to have been inflam'd; and you will readily conceive from whence all the differences betwixt this and the former obſervations aroſe.

And although, in the ſix broken ribs on the left ſide, and in the blood which fill'd that cavity of the thorax, there are ſufficient cauſes of a difficult reſpiration; yet if you obſerve that this reſpiration became more difficult when a delirium was added to it; that is, according to the opinion of the ancient maſters, when to a wound of the diaphragm an inflammation was added; you will enumerate among thoſe cauſes, and on this account, an injury of the diaphragm alſo.

(*f*) n. 29.

For

For we are not to ſuppoſe, that they were always deceiv'd, when they allow'd of a paraphrenitis in the inflammation of this part; although I have ſhown you formerly (*g*), that theſe two diſorders are not neceſſarily join'd together. Nor does the riſus ſardonicus always ariſe from a wound of the diaphragm: which is not only demonſtrated by other obſervations, but by the two juſt now propos'd. And yet that this was not falſly aſſerted in Ariſtotle (*h*), may be underſtood from Hippocrates (*i*), from whom Valleſius ſuppos'd him to have taken it (*k*). And this is confirm'd by Pliny (*l*), from "the ſhows of the gladiators," which were very frequent at Rome. In looking over a paſſage of which author at any time, I have not been ſo much ſurpriz'd, that, following Celſus (*m*), he has aſſerted the diaphragm to be a membrane, which "has no fleſh, but a ſlender nervous ſubſtance;" as that a note has been haſtily added by Dalechampius, and, as I ſuppoſe, not read over again, wherein he ſays: "Anatomy ſhows this to be falſe; "the circumference of the ſeptum, indeed, is nervous and membranous, "yet the middle part of it is fleſhy."

But I return to my ſubject. Whether you conſider that ſimilitude of laughing in the convulſive concuſſions of the diaphragm, as Hippocrates ſeems to have done, who call'd this laugh *tumultuous*; or even in the face, as moſt perſons generally do; and amongſt theſe Bartholin (*n*), who confirms the thing by an example which he refers to in his *Saxon*, and explains it by the phrenic nerves, with leſs perſpicuity than that very exact anatomiſt Meckel (*o*) has done lately; the ſmall branches of the cervical, from whence they ariſe, being produc'd through the face; whether you conſider it, therefore, in one or the other way, or in both of them, as this laughter is not a mere ſuppoſition; becauſe it does not occur in all wounds of the diaphragm; ſo neither is the delirium a mere figment, though it does not attend all inflammations of the diaphragm.

Yet, if you chuſe to have no regard to ancient obſervation, you, nevertheleſs, cannot deny that the diaphragm, which is the principal inſtrument we uſe in reſpiration, when it is not only wounded, but inflam'd alſo, and depriv'd in part of its ſupport, by reaſon of the fracture of the ſeventh rib, is chiefly to be reckon'd among the cauſes of that very difficult reſpiration.

7. A man, about forty years of age, who had labour'd a long time under a lues venerea, with very violent pains in his joints, and a difficulty of breathing, particularly when aſcending any height, having fall'n upon the ground from a very high place; that is to ſay, a place to which he had aſcended by a ladder of forty rounds; at firſt, indeed, cried out for aſſiſtance, but ſoon after could ſpeak no more, and was carried off by a ſudden death.

In the belly, and the head, was nothing worthy of remark, or preternatural. But when the thorax was open'd, all the cavity of the pericardium

(*g*) Epiſt. 7. n. 14.
(*h*) De Part. Animal. l. 3. c. 10.
(*i*) Epid. l. 5. n. 34. apud Marinell.
(*k*) Comment. in hunc locum n. ipſi 94.
(*l*) Nat. Hiſt. l. 11. c. 37.
(*m*) De Medic. l. 4. c. 1.
(*n*) Anat. quart. renov. l. 2. c. 3.
(*o*) Hiſt. de l'Acad. R. des Sc. de Berlin, A. 1752.

was found to be full of concreted blood; which ſeem'd to have burſt forth from the great artery near to the heart. For the probe being paſs'd thither from without, was ſeen to come within the cavity thereof.

8. Valſalva himſelf knew a vein to have been ruptur'd in the belly by a fall from on high, as I ſhall write to you hereafter (*p*). Why then, in this man, if a veſſel muſt have been ruptur'd in the thorax from a ſimilar cauſe, did not this rupture happen rather to a vein than to a veſſel furniſh'd with very thick coats, ſuch as the trunk of the great artery is, eſpecially near the heart? Let us ſuppoſe that the man had been, from the lues venerea, ſubject to a difficulty of breathing, and that the great artery was not found to be ruptur'd, but pierc'd through, as it ſeems to have been, with a ſmall, and perhaps oblique foramen.

Thus you, who bear in mind what I have ſaid (when treating of ſudden death from the diſeaſe of the blood-veſſels (*q*)) of the diſorders of that artery perforating the coats by degrees, and opening a diſcharge for the blood, even within the pericardium; thus you, I ſay, will eaſily imagine what might have preceded in this man, from whence the trunk of the artery, being injur'd in that part, not only brought on a difficulty of breathing, by not ſufficiently propelling the blood; but, finally, by pouring out the blood, in conſequence of a fall of this kind having broken through any barrier that might ſtill remain in the external coat, brought on a ſudden death. And this injury would have been obſerv'd without difficulty, in my opinion, if Valſalva had inſpected the internal ſurface of the artery.

But be this as it will, it is certain that the diſorder which he found in the heart of that old man whoſe hiſtory I ſhall immediately deſcribe to you, had exiſted for a long time before; as is evident from the nature of the diſorder itſelf.

9. An old man, of ſeventy years of age, fell from a high place, and daſh'd the right ſide of his thorax againſt the ground. Being brought into the ſame hoſpital which I have mention'd above, he was ſeiz'd with ſo great a difficulty of reſpiration, and ſo acute a fever, that he died on the ſeventh day.

In the right cavity of the thorax, the lungs had grown ſomewhat hard; the lobe being univerſally affected with a great inflammation; eſpecially at the upper part, where it alſo adher'd cloſely to the pleura, and contain'd an abſceſs. The left lobe of the lungs was likewiſe of a red colour, but more on the back-part, ſo as to ſeem ſomewhat inflam'd; and had black ſpots, lying at a diſtance from each other, through its ſubſtance. The pericardium contain'd a great quantity of water, and ſo large a heart as almoſt to equal that of an ox in its ſize. In the ventricles of the heart were polypous concretions of a white colour, and pretty ſoft, one in each; but that which was in the right ventricle was the largeſt.

10. I do not doubt but, if it had been enquir'd to what diſagreeable ſymptoms this old man had been ſubject before his fall, there would have been ſome found which might have been aſcrib'd to that very increas'd ſize

(*p*) Epiſt. 54. n. 18. (*q*) Epiſt. 26.

of the heart. And although there was ſufficient cauſe, in the violent injury from the fall, why the right lobe of the lungs ſhould contract an inflammation and an abſceſs from the degeneracy thereof into ſuppuration; yet it is not altogether improbable, that this inflammation was the ſooner contracted, becauſe the lungs had been before compreſs'd by a heart of that kind, and relax'd by reaſon of the leſs quick paſſage of the blood through the heart, and conſequently through themſelves alſo; and were diſpos'd, upon the acceſſion of any new cauſe whatever, to retain this blood, and leſs fit to prevent the effects that follow'd therefrom.

11. Now, as we have given you hiſtories of blows and wounds which relate to the neck, the breaſt, and the ſides, from the papers of Valſalva; let us ſubjoin four obſervations of his which relate to wounds of the back.

12. A man, about five-and-forty years of age, was wounded with a ſharp-pointed inſtrument in the back, about the fifth and ſixth rib, at the diſtance of two inches from the ſpine. On the firſt days only a ſmall quantity of blood diſtill'd from the wound; but afterwards, about four or five ounces were diſcharg'd every day. This hæmorrhage being reſtrain'd about the tenth day, by means of various remedies, the wound ſwell'd, and began to diſcharge a great quantity of ſanies; the quantity of which was increas'd every day. The ſanies was viſcid and tenacious, ſo as to ſuffer itſelf to be drawn out into a long extent. This excretion continu'd a long time, and was join'd with a ſlow fever; ſo that the patient ſank gradually, and death came on at the forty-ſecond day from the infliction of the wound.

On diſſecting the body, it was found that neither the wound nor the ſanies had penetrated into the cavity of the thorax: and although the ſanies had form'd, to itſelf, many ſinuſſes and winding communications; yet that all the miſchief had been confin'd to the external parts.

13. How much better it is to moderate and check gently, than reſtrain, not only other hæmorrhages, but thoſe of wounds alſo, is confirm'd to you by this hiſtory. And you will be able to gather ſome uſeful admonition from the following.

14. A huſbandman, about thirty years of age, of a bilious temperament, being wounded with a cutting inſtrument in the left ſcapula, and quite to the ſecond rib, ſo as to make a large wound, was receiv'd into the ſame hoſpital that has been mention'd above. Being there under the care of Paul Piella, a very excellent phyſician and ſurgeon, he was ſeiz'd with a ſpitting of blood, a cough, a difficult reſpiration, had a weak and frequent pulſe, being often attended with ſwoonings; and as all theſe ſymptoms grew ſtronger and ſtronger upon him, it ſeem'd that he was very likely to die about the ninth day.

But this day being paſs'd over, and the ſymptoms remitting in ſome degree, the wound itſelf alſo inclin'd to be in a better ſtate; when, near the ſeventeenth day, the wound ſwell'd on a ſudden, although without inflammation, and a fever came on in a violent degree, with a languid pulſe, and a rigor diffus'd through the whole body, a ſenſe of weight in the thorax, a laborious reſpiration, and purulent urine; and death at length ſucceeded twenty-ſix days after the patient had receiv'd the wound.

The diſſection of the thorax was perform'd in conjunction with Peter Molinelli,

linelli, and Franceſco Guiccardini, aſſiſtant-phyſician of this hoſpital. The knife, in cutting out the ſternum, having neceſſarily penetrated into the right cavity of the thorax, a great quantity of fluid ruſh'd out, not very much unlike the ſerum of milk; and in this fluid the lungs ſwam. This fluid being exhauſted, a ſinuous cavity was found in this lobe, full of purulent matter, and communicating with that cavity of the thorax by a large aperture.

But the other, that is, the left cavity of the thorax, which, as has been already hinted, correſponded to the wound, contain'd no purulent matter, and had its lungs entirely uninjur'd and ſound. That part of the pleura, indeed, which was neareſt to the wound, was of a livid hue; but had not the leaſt foramen: nor was the wound, though examin'd to the bottom, and with the utmoſt care, found to have reach'd beyond that ſecond rib in its direction inwards.

15. The ſymptoms which, while you were reading the hiſtory of the diſeaſe, you would ſuppoſe to have been from the wound penetrating into the cavity of the thorax, you perceive, by reading the diſſection, were from the inflammation of the lungs, their ſuppuration, and an empyema which had follow'd this ſuppuration. Wherefore, as in other patients, ſo in wounded patients alſo, all the ſymptoms are not always to be imputed to the firſt and evident diſeaſe; but we are to ſuppoſe that another may be join'd thereto, which does not depend thereon: and even when the ſymptoms ſeem to be from the firſt diſeaſe, we muſt ſuſpect, and enquire with diligence, whether they may not rather be from ſome other diſorder join'd to the original one, as, in this caſe, from the marks of inflammation, which, perhaps, did exiſt in ſome degree; and theſe not ſuch as related to the left lobe of the lungs, which was the ſide whereon the wound had been receiv'd, but to the right lobe.

16. A young man, of twenty years of age, was wounded with a knife almoſt in the middle of the back; yet with this circumſtance, that the wound, inclining ſomewhat to the left ſide, tended towards the beginning of the ſixth and ſeventh rib. Not long after the wound was inflicted, a fever came on; and to this was added, after ſome days, a ſlight difficulty of breathing; a ſlight, alſo, and dry cough; but a great pain about the ſtomach, and a conſiderable tumour of the whole abdomen. At length, the reſpiration growing more difficult, the patient died near the ſixteenth day, the whole body having an icteric appearance.

When the belly was open'd, the inteſtines were ſeen to be turgid with air; but the liver was in a natural ſtate.

On opening the thorax, a little ſerum was found in the lower part of both its cavities. And as the left lobe of the lungs adher'd ſtrongly to the pleura, the membranous productions, whereby they were tied with the upper and anterior part of this membrane, ſeem'd to be moiſt, as it were, with ſanies: and that ſeem'd, in like manner, to be a peculiar adheſion, where the ſame lobe of the lungs was join'd to the pleura, in the part correſponding to the wound, in ſuch a manner, that it could not be ſeparated without laceration.

But the wound, although it reach'd quite to the pleura itſelf, after having paſs'd

paſs'd betwixt the muſcles that lie near the ſpine, did not, however, appear to have perforated this membrane. As to the lungs, they abounded with tubercles in many places, ſome of which were larger, and ſome ſmaller: and many of them were already ſuppurated, and when cut into diſcharg'd a ſanies; but others ſtill preſerv'd the ſimilitude of a ſound and uninjur'd gland. In the pericardium was a little ſerum. In each of the ventricles of the heart was a polypous concretion, which were both of them produc'd from thence into the auricles and annex'd veins; that in the right being pretty large, and that in the left but ſmall.

17. This young man, alſo; if ſome internal convulſion, to which the pain about the ſtomach, the diſtenſion of the inteſtines from retain'd air, and the icteric colour of the whole body may be imputed, had not happen'd to be added to the other bad ſymptoms, and to have brought on a more ſpeedy death; would, certainly, have expectorated blood and pus, upon the rupture of theſe tubercles in the lungs: and it would have been thought, that this expectoration muſt be owing to the wound penetrating into the cavity of the thorax. But whether pus, taken up from the deep wound into the ſanguiferous veſſels, (as I have ſaid, lately (*r*), happen'd from wounds of the cerebrum) and carried into the lungs, excited thoſe tubercles; or whether they had begun to exiſt of themſelves before the wound was inflicted; I leave entirely undetermin'd.

18. Another young man receiv'd a wound in the left part of his back; which paſſing downwards obliquely, and to the right ſide, and grazing upon the vertebræ, at length enter'd the right cavity of the thorax betwixt the ſixth and ſeventh rib. For ſome days after receiving the wound, the patient ſuffer'd a ſlight difficulty of breathing, and a kind of pain, which correſponded thereto, in the anterior part of the body: he felt a pain, likewiſe, when he turn'd himſelf from one ſide to the other. He was alſo troubled with a kind of itching, ſometimes in one place, and ſometimes in another. To theſe ſymptoms was added, on the fifth day, a cough, with a ſpitting of blood; and after that a kind of ſtupor in the lower limbs. This ſtupor was ſucceeded by a paralyſis, from the middle of the body quite to the extremities of the feet; ſo that the power of moving and feeling remain'd only in the thorax and the parts above. He was at the ſame time attack'd with a tumour and tenſion of the abdomen, and a ſuppreſſion both of the urine and the inteſtinal fæces. After the coming on of this palſy, the patient ſeem'd to himſelf to be ſomething better. Yet he was ſometimes ſeiz'd with ſwoonings; in one of which he died on the beginning of the eighth day.

While the body was mov'd, a great quantity of blood burſt forth from the wound: which enter'd the cavity of the thorax on the right ſide, betwixt the two ribs that I have mention'd, near to the vertebræ; ſo as to make it ſeem natural to ſuppoſe, that this great quantity of blood muſt have proceeded from a laceration of the intercoſtal veſſels. The right lobe of the lungs ſhow'd no peculiar mark of injury in the part which correſponded to the wound; or, at leaſt, none that came under the cognizance of the ſenſes, ex-

(*r*) Epiſt. 51. n. 21. & ſeqq.

cept

cept that the external coat was eroded in ſome places: yet the whole of this lobe was of a red colour, and tumid. The pericardium was full of ſerum. From the heart, when cut into, a frothy and fluid blood burſt out; and in the right ventricle thereof was found a polypous concretion.

When the belly was open'd, all the inteſtines were turgid with air; and in them was a certain fluid ting'd with a black colour. The bladder was fill'd with urine. In the cavity of the belly were ſome pints of ſtagnant ſerum.

19. As Valſalva has, with propriety, accounted for that effuſion of blood, from the intercoſtal veſſels being lacerated, or eroded; ſo you, perhaps, would not err, if you were to aſcribe the paralyſis to a pricking or irritation of their attendant nerve from acrid ſanies. For from the former a convulſion would ariſe, and from the latter a conſtriction: and from hence, as I have already explain'd (*s*), ſo much more conſiderable a reſolution might happen, as every coſtal nerve is connected to that very long nerve which they call the intercoſtal. And you have a proof of the coſtal nerve being punctur'd, from that correſponding pain in the anterior part of the body, to which this nerve goes. However, notwithſtanding upon theſe ſuppoſitions it is not difficult to explain this hiſtory; yet, if any better mode of explication occurs to your mind, I ſhall with chearfulneſs aſſent thereto.

20. Thus far go the obſervations of Valſalva; now take mine: which I ſhall adjoin in the ſame order; although in regard to the two which relate to wounds of the neck, as one has been already ſent to you in a former letter (*t*), there is no reaſon to repeat it again here; and the other is extremely ſhort.

21. A man had his neck pierc'd through, in the inferior and anterior part, in ſuch a manner that the foramen which had been made by the entrance of the ſword, was ſcarcely more than an inch diſtant from the foramen which the ſword had made on coming out. This man died very ſoon, like a ſuffocated perſon.

The body, although I diſſected it at Venice, with a view to demonſtrate to my entreating friends, many and various things which relate to the natural ſtructure of the parts; yet at the ſame time confirm'd this ſuppoſition, that the man had died of ſuffocation. For one ring of the aſpera arteria, having been divided from the other, had laid open a paſſage for the blood to be diſcharg'd, from the incis'd veſſels, into this tube, and conſequently into the lungs.

22. I remember that two enquiries were particularly made of me in regard to deep wounds of the neck. Firſt, if any trunk or branch of the ſanguiferous veſſels, which is too large to be ſufficiently conſtring'd by introducing arm'd doſſils, or the like, be wounded, by what method can ſurgeons reſtrain the flux of blood? I anſwer'd, that it might be reſtrain'd by many methods, if the queſtion was of preſerving the patient for ſome time only; but if the queſtion was of preſerving him for a very long time, by ſcarcely any. For by generating a cruſt upon the internal jugular vein

(*s*) Epiſt. 11. n. 18. 20. (*t*) Epiſt. 44. n. 7.

itſelf,

itſelf, by means of a red-hot iron, this reſtraint was brought about, till the cruſt fell off; as you have it in Bohn (*u*): from whom not only this, but many other obſervations, which relate peculiarly to the bodies of thoſe who died of wounds, might be added to the Sepulchretum.

And the experiments which I have related to you in the nineteenth letter; and which ſhow, that if the carotid arteries, or internal jugular veins, are tied up with a ligature, what they formerly fear'd did not ſoon happen; may encourage the ſurgeon to tie up one, or the other, of theſe veſſels in one ſide, that the flux of blood may be reſtrain'd for ſome time. But it is evident, that the veſſels cannot be conſtricted, and ſtopp'd up, for a very long time, by other methods, any more than by thoſe which bring on a cruſt; nor can we, with any good grounds, hope, that after the ligature's being applied, thoſe bad ſymptoms will not ſooner or later come on; which, at length, of themſelves bring on death: although, in applying theſe ligatures, no error or omiſſion whatever was made by the ſurgeon.

For as both theſe trunks of veſſels are wrapp'd up within a kind of membranous, or, if you pleaſe, rather within a kind of cellular ſheath, together with the nerves from the par vagum, and intercoſtals; it is very difficult, in a deep place, and one that is cover'd by the flowing blood, to tie up either of them in ſuch a manner, that one, or other, or both, of thoſe nerves may not be tied up at the ſame time, or may not be hurt by paſſing the needle beneath the veſſels.

Nor; if the artery is to be tied up; is it ſufficient to conſtringe the artery, by putting a ligature below the wound, as thoſe experiments which I juſt now took notice of ſhow; but there is a neceſſity for applying another above the wound. Nor can the compreſſion which is made uſe of in the limbs, by means of a bandage call'd *torcular*, or tourniquet, take place in the neck; either to diminiſh the impetus of the blood into the conſtricted artery, or to intercept the flux while the ſurgeon is acting his part. For we are not only forbid to apply this compreſſion to the neck by the aſpera arteria, but alſo by the other veſſels, which muſt not, by any means, be compreſs'd.

And although you ſhould think of any thing to interpoſe betwixt that bandage and other certain parts of the neck, and particularly the part which is to be compreſs'd, ſo that their prominence may prevent the bandage from touching thoſe parts which are not to be compreſs'd; yet how can that which is moſt to be preſs'd upon, be compreſs'd ſo as to prevent the vein alſo, and nerves; which we have ſaid are carried together with the artery that is to be compreſs'd; from being compreſs'd therewith.

From theſe things, therefore, you perceive the very great difficulty of the affair. And from what has been ſaid above, you ſufficiently perceive, if it is difficult to tie up a trunk in ſuch a manner, as not to injure any part that lies near it, while the buſineſs is to be tranſacted in a deep place, which is, at the ſame time, overflowing with blood; you ſufficiently, I ſay, perceive, how much more difficult it is to tie up any neighbouring branch,

(*u*) De Renunc. Vuln. S. 2. c. 2.

without

without that danger; as, to the other difficulties, the ſtenderneſs of the veſſel is added: which, if it does nothing elſe, at leaſt greatly diminiſhes the power of diſtinguiſhing which of the many neighbouring branches is wounded, or in what part it is wounded.

And although this ſeems to be the natural ſtate of the circumſtances; yet as I am not ignorant that thoſe methods may ſometimes ſucceed, which we ſcarcely dare hope will ſucceed; I, for this reaſon, contracted my anſwer, ſo as to ſay, that this end could be ſcarcely brought about "by any means." Nor had I any reaſon to be ſorry I had anſwer'd thus, when, ſome time after, I lit on the cure of a wound inflicted in the internal jugular vein, as related by the celebrated Schlitingius (*x*); whoſe ſucceſs I wiſh all could attain to, as eaſily as they can imitate his hope.

23. But theſe things paſs'd in private conferences. Another enquiry was made of me, by letters, in the year 1735. A young man, of twenty-four years of age, and of a good habit of body, receiv'd a wound from a quadrangular and ſharp dagger, which paſs'd obliquely downwards, from the left ſide of the neck, at three fingers breadths below the external ear, towards the beginning of the ſpinal marrow. Although ſcarcely any blood was diſcharg'd from the wound, yet the young man immediately fell down; being, in ſuch a manner, depriv'd of the power of motion and feeling in all the parts which are below the head, that it was neceſſary to carry him home, and put him to bed: and there, having, among the few words which he ſpoke with a great difficulty of reſpiration, ſaid, that he was cold, a warming-pan was immediately applied, with great indiſcretion, to his thighs, his legs, and his feet, whereby he was very much burnt; though he himſelf did not at all feel theſe burnings, which at length degenerated into foul ulcers. At firſt he neither diſcharg'd urine nor ſtool; but after ſome days, he diſcharg'd his urine, not only in an involuntary manner, but even without his knowledge.

As he was diligently attended by a phyſician and ſurgeon; after the completion of the ſeventeenth day, the left ſide of his body firſt began to feel a little: and on the twentieth day, the fingers of the upper limb, and the toes of the lower limb, on the left ſide, both began to be mov'd in ſome meaſure: and betwixt that and the thirtieth day, both the powers were, by degrees, more and more encreas'd in the left ſide. As to the right ſide, however, which was the ſide oppoſite to the wound, ſenſation did not begin to return there till the thirty-ſecond day; and ſoon after that, motion return'd alſo, and went on to encreaſe, by degrees, in the ſame manner.

And although, on the fortieth day, the whole body had pretty well recover'd its ſenſe and motion; I ſay, pretty well, for he could not yet ſtand, and much leſs walk; and even although, on the twenty-ſixth of May; whereas the wound had been inflicted on the ſecond of February; the young man went out of his chamber, and with both his legs extenuated, and in a manner wither'd, walk'd ſlowly and gradually, juſt like a child who was learning to walk; yet even then, he us'd the right ſide of his body

(*x*) Act. N. C. Tom. 8. Obſ. 29.

with

with a more infirm motion than the left; and the latter had its ſenſation alſo the moſt perfect.

The cauſe of this difference then being aſk'd of me; I hinted, that we muſt ſuppoſe it to conſiſt in thoſe medullary fibres, which, paſſing betwixt the right and left ſide of the beginning of the ſpinal marrow itſelf (*y*), may ſometimes wholly, and, at other times, in great part, transfer the effect of the injury which had been done to this ſide, to the oppoſite. And although this explication has nothing peculiar in it; as it depends upon the explications of others, of a hemiplegia brought on by an injury of the brain in the oppoſite hemiſphere; yet, as this hiſtory ſhows, how much lower ſtill the ſeat of an injury, which produces the ſame effect, may be; it ſeem'd to me to be no deſpiſable obſervation, and therefore worthy to be propos'd to you, among other wounds of the neck. But now let us go on to the wounds of the thorax itſelf.

24. A man had been wounded in one of his clavicles almoſt a month before, and the cure of the wound indeed ſeem'd to go on very well; when, at length, he began to be ſeiz'd with a ſtupor of the ſenſes, and with rigors; to which there was by no means a correſponding heat. As he died with theſe ſymptoms, his body was brought into the college, that I might begin to teach anatomy from thence; it being now near the end of January, in the year 1732; till I ſhould be furniſh'd with a more proper ſubject.

The wound did not reach into the cavity of the thorax. But as I ſaw that the ſide oppoſite to the wound was green externally within two days after death, and no cauſe of this greenneſs appear'd within the thorax; I thought it was proper to look for it in the parietes: and pus was found betwixt the muſcles of the ſides and of the back. But there were abſceſſes alſo in other places; as, for inſtance, about the pyramidal muſcles of the abdomen.

Yet was there no pus within the belly; only ſome part of the omentum, and inteſtines, were of a green colour. The liver indeed, the ſpleen, the ſtomach, and the bladder, were larger than their natural ſtate requires. But there was no other appearance of diſeaſe beſides this, either in theſe, or in the other viſcera. Thoſe parts where the pus had inſinuated itſelf betwixt the muſcles, were the only parts that appear'd to be actually vitiated.

25. From this hiſtory it alſo ſufficiently appears, that pus may be receiv'd into the ſanguiferous veſſels, and transferr'd to another part. For if it were not carried by means of the ſanguiferous veſſels, how ſhould it, of itſelf, have come betwixt the muſcles, and not thoſe that lie near to the cavicle, but thoſe that are oppoſite, or at a great diſtance? Now give me leave to relate to you an obſervation of much greater moment, that is, an obſervation of the heart being wounded.

26. A poor man, a native of Milan, of forty years of age, being of a pretty muſcular habit of body, and healthy; except that his limbs were here

(*y*) Epiſt. Anat. 13. n. 20.

and there cover'd with a filthy ſcabies; after having din'd, and drunk plentifully, fell into a quarrel with another man of his own ſort, and receiv'd a wound with a knife, at the diſtance of two fingers breadths below the left pap. As but little blood was then or afterwards diſcharg'd, he walk'd, of himſelf, to about the length of ſeventy paces; after this he ſat down, and throwing up from his ſtomach what he had taken at dinner-time, he died there within half an hour; or at leaſt not much after that time: and this was about the fifteenth of March, in the year 1725.

The body being brought into the theatre of the college, in order that the anatomical demonſtrations, which the celebrated John Baptiſt Vulpius exercis'd, at that time, in the ſecond place, might be finiſh'd therefrom; it was examin'd with the greateſt diligence by both of us. And many things were obſerv'd, indeed, which do not relate to this place; ſince here, in general, we only relate ſuch things as appear'd to be more preternatural. And that I may juſt touch upon theſe things, before I write of the wound, they were briefly as follows:

In the belly, the ſpleen, which was, in other reſpects, ſound, was ſomewhat larger in every dimenſion, than might ſeem to agree with the ſtature of a man who was ſquare-built, and of a proper ſize; and even larger than ſeem'd to agree with the ſize of the liver. But, that there was little bile in the gall bladder, I did not at all wonder; as I knew, that both a vomiting, and a copious dinner, whereby it had been preſs'd out, had preceded: and indeed, at the mouth of the biliary duct, and in that neighbourhood, the inteſtine duodenum was ſeen to be moiſt with yellow bile.

As to what relates to the head, the ſanguiferous veſſels were turgid, and without doubt, from the great number of air-bubbles wherewith they were diſtended; many of which bubbles we ſaw, here and there, in the veſſels of the brain, and under the pia mater: being probably extricated from the blood, by reaſon of the warmth of the ſeaſon; eſpecially as the body had lain ſome time after death. For we did not come to the examination of the internal parts of the cranium, till the thirteenth day: at which time, taking out the brain, we obſerv'd that the cavity of the cranium was much larger towards the right ſide, than towards the left, in the occiput.

But the thorax, and the wound, which we examin'd on the firſt days, were in the ſtate I am about to deſcribe. The left cavity of the thorax had a great quantity of blood extravaſated in; it and the pericardium alſo, which was fluid however; and ſuch as was ſeen in other parts of this body, wherein it was, in general, more diſſolv'd, and more watery, than uſual; perhaps from the quantity of fluid which had been drunk, and which is ſoon carried through the chyliferous into the ſanguiferous veſſels. Yet the narrowneſs and obliquity of the wound were the obſtacles, in my opinion, to this blood's being diſcharg'd at the external orifice.

By following the paſſage of the knife from this orifice, we found, that it had paſs'd from that place which I have mention'd, betwixt rib and rib, obliquely upwards, and to the right ſide, to the mediaſtinum, the pericardium, and the anterior ſide of the left ventricle of the heart; which was to be pierc'd through, nearly about the middle of the length of the ſame ſide. There was a wound on the external ſurface of the heart, of narrow dimen-

ſion indeed, but not leſs long than the point of the little finger's extremity is broad; ſo that, when I open'd the ventricle, I was at firſt ſurpriz'd, that the termination of the wound did not appear on the internal ſurface; till imagining, what was really the caſe, that the foramen was cover'd over by the network of thick fleſhy fibres, and faſciculi, which lay oppoſite to the wound; I took thoſe fibres and faſciculi away with great accuracy, as has been ſaid in the fifteenth of the Epiſtolæ Anatomicæ (*z*): and it was manifeſt to all, that the wound had reach'd into the cavity of the ventricle, after piercing through the whole thickneſs of the fleſhy paries, and the internal membrane.

In the lungs, we not only found the anterior ſurface itſelf of a black colour, and variegated; but we alſo found a part of the food which had been taken into the ſtomach, and which the larynx had intercepted, while it was thrown up by vomiting, in conſequence of the proper offices and functions of the parts which are about the fauces having been diſturb'd, in that tumultuous agitation of the whole body, and during the deficiency of the vital power: ſo that, beſides what was in the bronchia, no inconſiderable portion of theſe ingeſta had ſtagnated in the trunk of the aſpera arteria. And we made no doubt, but the man's death had been more ſudden on this account: and certainly the face, even for ſome days after death, was turgid; by reaſon of the veſſels being ſo diſtended with blood, as to have the appearance which they are found to have in a ſuffocated perſon.

27. Thoſe wounds of the heart which reach to the left ventricle, occur more ſeldom than thoſe that penetrate to the right ventricle. For the heart is ſo ſituated, that a much leſs part of the former than of the latter ventricle, lies open to wounds, moſt of which are inflicted in a direct oppoſition to the heart. And this I conſider as the effect of that ſame providence, whereby the larger trunks of the ſanguiferous veſſels are, wherever it was poſſible, either ſeated very deeply, or drawn back to a ſeat leſs liable to injuries. Thus the crural arteries paſs, in great part, through the thighs internally, and through the ham: thus the brachials are carried through that ſide of the humerus which is turn'd towards the thorax; and not on the external part.

And the left ventricle of the heart is certainly that, by the force of which blood is impell'd into the brain, and to all the body; ſo that if this force be very much weaken'd, and the office of the ventricle be very much impeded, death muſt of neceſſity be the conſequence: and this Galen (*a*), with juſtice, pronounc'd would happen, "particularly if the belly of the left part of the "heart ſhould be wounded."

Now if you run over in your memory, the great number of wounds of the heart that you read in this third ſection of the Sepulchretum (*b*), you will be leſs ſurpriz'd, that thoſe are by far the moſt in number which relate to the right ventricle; to which thoſe two alſo relate, that I have pointed out

(*z*) n. 61.
(*a*) De Loc. aff. l. 5. 2.
(*b*) Obſ. ſub n. 23. & in Addit. Obſ. 3.

above (*c*), from the Hiſtory of the Royal Academy of Sciences at Paris: and out of the very few which have come within the left ventricle, you will ſee that there are none, after which the man dragg'd on his life, I do not ſay to the twenty-third day, or to the ſixteenth, or to the ninth, or to the ſeventh, but to the fourth, or to the fifth; though you will ſee that life was carried on to thoſe periods, more than once, after a wound penetrating the right ventricle.

You will find that both he of whom Diemerbroeck (*d*), and he of whom Timæus (*e*), gives the hiſtory, died immediately upon the perforation of the left ventricle. It is true, he liv'd an hour whom Lucius (*f*) ſpeaks of; and even four or five hours another, whoſe caſe is related by Dolæus (*g*), though I believe no mention of it is made in the Sepulchretum; yet in both theſe patients both the ventricles were pierc'd through.

But what is an hour, or what are a few hours, to ſuch a number of days as I have mention'd? to ſixteen for inſtance, nay even to three-and-twenty; for to this period it is certain that Fantonus the father ſaw life extended in a caſe of this kind. And if by reaſon of ſome typographical error, you ſhould doubt whether that obſervation of his, which we read in this ſection (*h*), relates to the right ventricle; you will have all your ſcruples remov'd, if you read the ſame over again, as it has been ſince publiſh'd, more than once, by his celebrated ſon (*i*).

There is, indeed, in the latter end of the Sepulchretum, another obſervation of the father's (*k*), on a man who "had liv'd ſeventeen days;" whereas "the ſeptum of the heart was wounded in the baſis, the wound ſlightly pe-"netrating the left ventricle, and terminating in the right;" or, as the ſon afterwards publiſh'd it (*l*), "the wound ſlightly touching upon," or, "ſlightly "injuring the left ventricle of the heart, and penetrating into the right;" ſo as to make you naturally conjecture, that the ſeptum being obliquely pierc'd through, "by a thin and very ſharp ſword," the left ventricle was ſlightly graz'd upon in the paſſage, but that the right was open'd; though "by a ſmall foramen," juſt as in that other obſervation of which I firſt ſpoke.

But leſt you ſhould be in doubt about a hiſtory which is transferr'd into this ſection (*m*) from Henricus ab Heer, ſuppoſing that, becauſe "he found "the baſis of the heart, and the apex thereof, pierc'd by two muſquet-"balls, with a very great laceration," the wound had reach'd into the left ventricle; read the whole of it, and you will find that the wound penetrated into neither of the ventricles: for otherwiſe he could not have ſatiſfied theſe perſons, who wonder'd how the life of the patient could have been produc'd to the end of the ſeventh day, by citing, as he ſays he then did, the opinion of the ancients, that, "when the ſubſtance of the heart only is "injur'd, if the wound does not penetrate to the ventricles, the patient may

(*c*) n. 4.
(*d*) Obſ. cit. 23. § 12.
(*e*) Ibid. § 18.
(*i*) Patern. Obſ. 33.
(*f*) Ibid. § 16.
(*k*) Obſ. 17.
(*g*) Eph. N. C. Dec. 2. A. 2. Obſ. 188.
(*l*) Obſ. 17.
(*h*) Obſ. cit. 23. § 10.
(*m*) Obſ. cit. 23. § 10.

"ſurvive

" ſurvive for ſome days, till he is ſnatch'd away by a ſupervening phleg-
" mon."

Nor does it eſcape me that, beſides the various ſituation, the ſtrait direction alſo, or obliquity, the ſhortneſs or length, but particularly the largeneſs or narrowneſs, of the wound, has a great effect in accelerating death, or retarding it; in proportion as the heart is more or leſs hurt, or more or leſs blood is diſcharg'd from one or other of the ventricles. For which reaſon I ſuppoſe that this man, whom I diſſected, might have dragg'd on his life for ſome time longer, if ſuffocation had not been added to the wound (for regard muſt be had to the circumſtances that are join'd with the wound of the heart in thoſe who die very ſoon, as, for inſtance, in a certain obſervation of Mauchartus (*n*)) yet not ſo long as he that I have deſcrib'd above (*o*) from Valſalva, who liv'd quite to the eighteenth day, after a penetrating wound of the right ventricle.

And it ſeems that this difference may be gather'd from comparing, one with another, the great number of obſervations, which I have referr'd to, of one or the other ventricle being wounded; unleſs there be ſome one of thoſe obſtacles that I mention'd juſt now, or even others: as in this man whom I diſſected, the reticulated fibres and faſciculi lying one upon another, and ſo covering the wound; as in him whom Bartholin (*p*) examin'd, " the lips " of the wound collapſing;" as in him of whom Billyius (*q*) ſpeaks, " a coa-
" gulum of concreted blood ſtopping up the wound of the heart:" or if there is no obſtacle, even the very weakneſs of the heart in contracting itſelf, and conſequently in throwing out the blood at the wound; which, in the hiſtories of Fantonus that have been mention'd, the frequent ſwoonings, and the quantity of blood diſcharg'd, ſeem to ſhow.

And for theſe reaſons it was, perhaps, that the young man, whoſe right ventricle of the heart had been wounded with a knife; the wound being equal to ſix lines of Paris, and inflicted horizontally, at the diſtance of three inches from the apex, reaching from the external paries to the oppoſite ſide; did not die before the ſixth day. There had been a great profuſion of blood, a very conſiderable ſyncope (beſides very ſlight ſwoonings), and that more than once; and on the three laſt days ſcarcely any pulſe; though on the ſecond and third there had been a violent fever, with a ſtrong and full pulſe: which circumſtances, together with others that were remark'd with more accuracy than I remember to have read in moſt of the obſervations of the wounded heart, you may ſee deſcrib'd, briefly indeed, but with great perſpicuity, by Stephen Gaſpareni (*r*), formerly my auditor, but now an eminent phyſician and ſurgeon at Feltri.

When I had revis'd thus far what I have hitherto ſaid, that excellent treatiſe of the heart, by the illuſtrious Archiater Senac, was brought to me: and in reading over that chapter (*s*) which is entitled, " Of wounds of the heart," I ſaw that it contain'd whatever could be wiſh'd for, as far as relates to the theory, to the uſeful compariſon of obſervations one with another, and to

(*n*) Eph. N. C. Cent. 1. Obſ. 18.
(*o*) n. 3.
(*p*) Sect. hac Obſ. cit. 23. § 15.
(*q*) in Addit. ad hanc Sect. Obſ. 3. in Schol.
(*r*) Obſerv. Med. Chir. 9.
(*s*) l. 4. ch. 6.

the

the cure itſelf, as far as any curative methods can be attempted. For which reaſon I make no ſcruple to perſuade you to peruſe the whole of it, more than once.

You will, at the ſame time, light on obſervations, ſome of which I was without, and chiefly thoſe of his own that he gives; and among theſe, particularly, thoſe which are of ſuch a nature, as to confirm the opinion that wounds may penetrate into the ventricles, and yet no great effuſion of blood be brought on; either becauſe he found a deep wound ſtopp'd up with a coagulum of blood, or becauſe the fibres, being irritated by the wound itſelf, contract themſelves in ſuch a manner, as to prevent the diſcharge of the blood; or in conſequence of the wound being oblique: and he produces a ſingular inſtance of great obliquity; for he ſaw a wound, in which the ſword had been paſs'd through the ſubſtance of the heart, from the apex to the baſis.

And although he admoniſhes that this kind of obſtacle can happen leſs eaſily in wounds of the right ventricle, by reaſon of the thinneſs of the parietes; he, nevertheleſs, does not deny that the effuſion of blood, from this ventricle alſo, is ſometimes not very great. But if the hæmorrhage, from either of the ventricles, be not ſo large as, of itſelf, to be ſpeedily fatal; yet he ſhows that from the inflammation which comes on afterwards, and unleſs this be diſcuſs'd, from the conſiderable ſuppuration, there is great danger at hand. Theſe things, however, I had rather you would ſee of yourſelf, than learn from my recital.

28. And from a wound alſo of a large ſanguiferous veſſel; one of thoſe in particular that are contain'd in the thorax, eſpecially an arterial tube; that a great quantity of blood is pour'd out, and the man carried off; if it were not both evident by reaſonings, and confirm'd by the frequent diſſections of wounded perſons, an obſervation of Jo. Andreas Uſenbezius (*t*), which you will add to the Sepulchretum, might ſhow. And then, indeed, it is certainly in the power of the anatomiſts, to demonſtrate from whence the blood was diſcharg'd.

Whereas, on the contrary, if a ſlender veſſel be injur'd, the blood, flowing out ſlowly, may, by its quantity being continually, though gradually, increas'd, deſtroy the man; but it is ſometimes with difficulty that it is found, from whence the blood has been diſcharg'd: and indeed this queſtion, in ſome caſes, cannot be determin'd at all, unleſs time be given for making the enquiry by the help of injection; as in a man, in whom one of the cavities of the thorax was ſeen to be fill'd with a great quantity of blood, from a wound. But from whence this blood had flow'd was ſo obſcure, that it could not be found out, even by our Mediavia, a man whoſe accuracy was well known to me. As it is a hiſtory by no means deſpicable in other reſpects, I will immediately communicate it to you, in the ſame manner as he himſelf communicated it to me, on the very day of the diſſection, which was the firſt of May 1742.

29. There was a French cook here, who, happening to quarrel with another man, was wounded, by his drawn ſword, with a blow which paſs'd ob-

(*t*) Eph. N. C. Cent. 7. Obſ. 58.

liquely

equely from the right ſide to the left. The wound indeed was manifeſt about the right ſide of the ſternum, almoſt in the middle of it: but whether it penetrated into the cavity of the thorax, could not be diſtinguiſh'd by the probe, nor by any other means. The cough and the ſpitting, which was now and then ting'd with blood in ſeveral places, could ſignify nothing certain in a man who had been, for a long time, ſubject to a cough; and to cineritious and bloody expectorations, with a difficulty of breathing.

Yet this difficulty of breathing was now become much greater, and had a fever join'd to it, with a great frequency of pulſe, a hardneſs, and a violence of ſtroke; but without any intermiſſion, or inequality. And on the laſt day of his life alſo, which was the fourth from the infliction of the wound, although the pulſe was become extremely bad; yet the patient lay ſupine, or on either ſide, juſt as he choſe; and even ſat up in bed to write a letter: nor ever complain'd of an anxiety of the heart, or of any pain whatever.

In examining into the ſtate of the wound after death, the cartilage of one of thoſe ribs that are join'd with the ſternum, was found to be cut into, quite to the middle of its height; but the remaining paſſage of the ſword could not be clearly found out. For this was the ſtate of the thoracic cavities. The right cavity contain'd nothing but the lungs themſelves, which were every where connected to the pleura, flaccid, of a blackiſh colour, and in a very bad ſtate; but without any hardneſs. The left cavity, however, was very full of fluid blood; and in this blood the lungs floated, being every where unconnected and ſound.

The internal ſurface of the ſternum had a kind of blackneſs in the left ſide indeed, but not the leaſt trace of inciſion; nor could any traces thereof be found in any veſſel, nor in the lungs. The pericardium, which was become pretty thick on the right ſide, ſeem'd to have adher'd to the heart in ſome part of it; and contain'd a ſmall quantity of yellow and mucous pus. The external ſurface of the heart was unequal, and in ſome meaſure corroded. In the ventricles was no blood: yet there were polypous concretions.

But the ſubſtance of the heart was ſo lax, and flaccid, that although about the baſis of the right ventricle, where ſome very ſmall part of that mucous pus adher'd externally, it ſeem'd to have a foramen, and very readily admitted a probe; yet it was doubtful whether there was a foramen before, or whether the probe had not made this foramen for itſelf, by reaſon of the great laxity of the muſcular ſubſtance. Thus, as the diſeaſe of the thorax, which had been of long ſtanding, had held the phyſicians in ſuſpence while the man was living; ſo they alſo held the anatomiſts ſuſpended in their opinion, after death.

30. That the ſword had penetrated into the left cavity of the thorax, and wounded ſome ſanguiferous veſſel, appears from the quantity of blood which was extravaſated thereinto, although it is uncertain what veſſel this was. But as it is very difficult to underſtand, from the ſtate of both theſe cavities, and of the heart and pericardium, how thoſe ſymptoms could be preſent or abſent, which it is very certain, from the hiſtory, were preſent or abſent; we ought the more ſtudiouſly to retain this obſervation in our memory, that thoſe things ſometimes happen which are leſs uſual; not being ignorant that

we

we aſcribe a great deal, for the moſt part, to the preſence or abſence of the ſymptoms; but not all the circumſtances always.

31. Thus far of wounds of the thorax: in regard to which you will read a hiſtory of Jo. Adrian Slevogtius (*u*), that deſerves notice, on account of the ſlight ſymptoms of their moſt conſiderable effects. And as I am now about to add ſome obſervations of blows, and compreſſions, which happen without a wound, we will begin with that which was formerly communicated to me by Ignatio Pedratti, a phyſician at Cremona, whom I have formerly ſpoken of to you (*x*). You may compare it with another which is propos'd by the ſame Slevogtius (*y*).

32. A man fell from his horſe. The horſe ſtruck his breaſt with one of his feet, as he lay. No external mark of injury appear'd therefrom: but he had ſo great a difficulty of breathing, that neither by blood-lettings, nor by the application of proper remedies externally and internally, could the phyſicians prevent death from coming on within the fifteenth day after the blow. No rib was found to be broken in the diſſection: but betwixt the ribs and the pleura was a tumour of a conſiderable ſize, made up of congeſted blood, as it were: and there was a diſeaſe in the lungs which correſponded thereto.

33. A country-lad, of ten years of age, lying upon the ground, had the wheels of a cart run over his thorax: though in what poſture he lay could not be learn'd. This was known, that he expir'd within an hour: and this happen'd at Bologna, in the autumn of the year 1706.

As I examin'd the natural ſtate of ſome of the parts, for the ſake of anatomical improvement, I found blood extravaſated in the thorax, and ſome ribs depreſs'd and broken on the left ſide; and, on the right ſide, I found the inferior lobe of the lungs torn away from the back; that is to ſay, open'd with a large and deep hiatus, in a longitudinal direction. In the heart was ſcarcely any blood, and no polypous concretion.

34. After what has been ſaid, in the preceding letters, of great injuries being found within the head from the effect of blows, at the ſame time that the head has been externally ſound; and theſe ſometimes in the part oppoſite to the blows; I ſuppoſe you do not greatly expect that I ſhould explain theſe two obſervations. To the ſecond, however, you ſee that a cauſe was added, by a ſudden compreſſion ſtreight'ning a viſcus full of blood and air, and forcing it againſt the oppoſite ribs. But to the firſt you will ſee that thoſe things relate, which will be ſaid on a future occaſion (*z*), of the internal parts of the belly being ruptur'd, while the abdomen was ſound.

I rather chuſe to take notice, at preſent, of ſome other hiſtories which may be added to the Sepulchretum; and which relate to blows and compreſſions of the thorax, whereof we treat. To ſay nothing, therefore, of the ſuſpicion of Gahrliepius (*a*), of bones being generated betwixt the pleura and the coat of the lungs, at the juncture of the ribs; as if the firſt cauſe of

(*u*) Differt. inſcr. Vomicæ Pulmon. & cæt. Exempla, § 61.
(*x*) Epiſt. 21. n. 43.
(*y*) Differt. modo cit. § 21.
(*z*) Epiſt. 54. n. 14. & ſeqq.
(*a*) Eph. N. C. Dec. 3. A. 9, & 10. Obſ. 43.

them

them had been a preceding very violent daſhing of the breaſt againſt the ground; read, in Bohn (*b*), of that old man being ſo violently daſh'd againſt a bench, that, five ribs being broken "tranſverſly," he died within a week in a ſtate of ſuffocation.

The ſame author (*c*) alſo diſſected another man, who died much ſooner; becauſe, beſides that many more ribs were broken, and ſome laxated, blood, which had been extravaſated within the thorax from the ruptur'd intercoſtal veſſels, and from one of the internal mammary arteries, had accelerated the ſuffocation. And this man had been run over by the wheels of a loaded carriage.

That man was carried off by ſuffocation likewiſe, but unexpectedly, and on the eleventh day of the diſeaſe, who had been trampled upon by the horſes as he lay proſtrate on the ground, and whoſe back had been compreſs'd by the wheel of a loaded waggon paſſing over it. In this body, beſides other things, Theodorus Zuingerus (*d*) ſaw three ribs broken, and the cartilages of ſome of them quite torn away. And Mery (*e*) found two ribs broken in an old man whoſe breaſt had been compreſs'd by the wheels of a paſſing chariot; the emphyſematous tumour firſt beginning at the ſeat of the fracture, and, with a difficulty of reſpiration, afterwards increaſing through almoſt the whole circumference of the body, till death came on in the fourth day; ſo as to make us not wonder that the huſbandman (*f*), upon whoſe ſide the whole bulk of a plough had been daſh'd in ſuch a manner, by a horſe who ran away with it, as to break a rib, upon which an emphyſema came on, ſhould, as often as ever he drew in the air, have "a tumour, of the bigneſs "of a hen's egg, protuberating in the region of the broken rib;" which tumour receded ſoon after in exſpiration. But this patient, as he was a young man, of a robuſt conſtitution, and treated in a different manner from the old man, recover'd.

I had almoſt omitted a more ſurpriſing hiſtory, and one which relates pretty much to thoſe things that have been ſaid above of wounds of the heart. This hiſtory is Chriſtian Vater's (*g*); who having found the upper ribs of a woman that had been violently ſtruck upon the breaſt by a paſſing carriage, and kill'd thereby on that very day; having found the upper ribs, I ſay, near to the ſternum, together with the clavicle, broken on the left ſide, although they were leſs bent inwards, and had injur'd the pericardium much leſs; within this cavity (the parietes of which were ſound, and diſtended with extravaſated blood) nevertheleſs, found the right ventricle of the heart, not far from the apex, "ruptur'd to almoſt the length of an inch."

And this obſervation you will join with that which is ttansferr'd, from the royal ſurgeon Boirellus, into the Sepulchretum (*h*); I mean, of a man who died three or four hours after a leaden bullet, diſcharg'd from a muſquet, had enter'd his breaſt: for although the bullet had ſtopp'd ſhort on this ſide

(*b*) De Renunc. Vuln. Sect. 1.
(*c*) Ibid.
(*d*) Dec. modo cit. 3. A. 5, & 6. Obſ. 277.
(*e*) Mem. de l'Acad. R. des Sc. A. 1713. Obſ. 4.
(*f*) Act. N. C. Tom. 5. Obſ. 51.
(*g*) Dec. 3. cit. A. 9, & 10. Obſ. 104.
(*h*) In Addit. ad Sect. hanc 3. Obſ. 1.

the pericardium, yet within this cavity, the parietes whereof were entirely unhurt, but diſtended with blood, was found a wound of the heart; and in the inferior part of the right ventricle, in like manner. In regard to which two hiſtories, I ſuppoſe, you will not be much ſurpriz'd, that the wound or rupture of that ventricle brought on ſo ſudden a death, if you obſerve that the blood could by no means get out from the pericardium, which was unhurt, as it did in other wounds of the heart; and that being, for this reaſon, collected and crowded together, it had produc'd the ſame effect that, as has been already ſhown (*i*), a fluid effus'd into the cavity of the ſound pericardium, from an internal cauſe, can produce.

But as to the heart being ruptur'd, without a rupture of the pericardium, Borellus had promis'd that he would point out the cauſe of it when he publiſh'd his obſervation (*k*). And what Vaterus thought of this matter, you will ſee in the latter part of his obſervation. To me, however, though I do not diſapprove the thoughts or inventions of others, it ſeems, that where the queſtion is of the heart, or the arteries, being ruptur'd by a blow receiv'd on the body, without the parts themſelves being touch'd by it; that ought to be added which Lanciſi (*l*) did not doubt was to be attended to in the arteries, when weaken'd from a ſimilar ſtroke: I mean, whether the percuſſion had happen'd in that point of time wherein they were dilated: for at that time, as they do not recede from the ſtroke, but even meet and give reſiſtance to it, they themſelves increaſe the cauſe of the injury.

And in proportion as the paries of the right ventricle of the heart, which is of itſelf thin, is thinner when dilated, it will be the more liable to receive an injury from the percuſſion. And if you add, that there is a greater quantity of blood in ſome bodies, you will the more clearly conceive of that paries being both dilated and extenuated, ſo as to be ruptur'd without great difficulty by the force of a ſudden and very violent percuſſion.

Yet I do not think that animadverſion of Lanciſi is, of itſelf, ſufficient to make us underſtand in what manner that could happen which Jacob Cicognini, formerly counſellor and phyſician at the court of Turin, and after that, as long as he liv'd, my moſt worthy collegue in this univerſity, aſſerted to Valſalva and me that he had been witneſs to.

35. An old man, being buſy in cutting wood in the foreſt of another perſon, was caught by the maſter of the foreſt in the middle of his theft. The maſter firſt blam'd him, which was anſwer'd from the old man by curſes and threats; and, at length, as the old man was running away, the maſter ſtruck him on the back, once only, with a club. The man fell down dead from the blow, after going two or three paces.

The great artery was found to be ruptur'd tranſverely, and cleft aſunder; notwiſtanding the vertebræ and ribs were ſound and unhurt.

36. What I ſaid above (*m*) of the ſame artery, when, after a fall from a very high place, it was found by Valſalva in a perforated ſtate within the pericardium, I muſt ſay here ſo much the more, where the artery is found to

(*i*) Epiſt. 26. n. 18.
(*k*) Zodiac. Med. Gall. A. 2. M. Jul. Obſ. 20.
(*l*) De Aneur. l. 2. c. 2. Propoſ. 21. cum Schol.
(*m*) N. 8.

be ruptur'd tranſverſely. The old man was ſtruck with a ſtick; and how often, and how much, we have ſeen this artery to be eroded internally in old men, our letters to you ſufficiently ſhow. If it happen that this veſſel was very near to rupture of itſelf, when it receiv'd a concuſſion from a violent blow upon the vertebræ, to which it adher'd; it will not ſeem very foreign to probability to ſuppoſe that it might be broken through: eſpecially as by reaſon of the various paſſions and feelings of the old man, who was caught in the theft, enrag'd, and put to flight, the artery would be ſtreighten'd at the ſame time, in ſeveral places, by irregular contractions; and the action of threatening and curſing, and the efforts of running, would more ſpeedily urge on the blood, and urge it more vehemently into this artery: to omit that, by two blows of this kind, (which, however, were receiv'd on the hypochondria) Samuel Graſſius, as you will even read in the Sepulchretum (*n*), had, beſides the ſpleen and the vena cava, ſeen the great artery alſo torn aſunder in a young man.

And in the porter of whom I ſhall ſpeak preſently, the cauſes both of the ſudden death, and of thoſe parts that were found to be broken in the dead body, were, of themſelves, very evident to all, and did not relate to the thorax only, but to the head alſo; as was the caſe in a man, and a young man, whom I have deſcrib'd in the preceding letter (*o*): ſo that I ſcarcely deferr'd this obſervation to the preſent opportunity, on any other account, but to prevent my being too prolix in that letter; for it might with great propriety have been propos'd there.

37. A porter, of a pretty fat and muſcular habit, being in very good health, and buſy about ſomething or other on a very high roof, fell down from thence, headlong, upon a road pav'd with hard ſtones, and died immediately. This happen'd in the month of January, in the year 1725, when the time was at hand in which anatomical demonſtrations are annually given in this theatre.

His carcaſe was, therefore, given to the college, and was the more accurately diſſected by me, as it was more fit for this purpoſe than moſt bodies are. But I ſhall now take notice of the preternatural appearances only, as I preſerve the natural appearances, except a few, to another time; yet I ſhall not mention all that were preternatural, as I have hinted at ſome of theſe things when writing to you on other occaſions, as will be ſaid below in the proper places.

When the belly was open'd, we found ſome tract of the ſmall inteſtines to be univerſally livid; and as two-and-twenty hours were not yet elaps'd ſince death, we diſtinguiſh'd the chyliferous veſſels of that part of thoſe inteſtines which was neareſt to the ſtomach, that was diſtended with food; and for this reaſon we obſerv'd but a ſmall quantity of bile in the gall-bladder. But in whom prominences were ſeated upon the ring of the pylorus, has been ſaid in the twenty-ninth letter (*p*): as it has been hinted in the forty-third (*q*) what was the ſtate of the urethra.

The trunk of the great artery, in all that part which belongs to the belly,

(*n*) In Addit. ad hanc Sect. Obſ. 31.
(*o*) N. 34, & 35.
(*p*) N. 17.
(*q*) N. 9.

ſhow'd here and there, internally, beginnings of future bone: and when look'd upon both internally and externally, inſtead of one cœliac artery, had three ariſing from itſelf; one of which was very ſmall, two conſiderably large, but all very near to each other. The thorax had ſeventeen of its ribs broken. The left lobe of the lungs coher'd with the pleura. The ſuperior vena cava, in the very extremity of it, appear'd to be in a manner eroded, as it were, on the internal ſurface; and the great artery, on its internal ſurface alſo, not far from the heart, was reticulated, for a conſiderable tract, with thick and white fibres: beſides, at the curvature it had become indurated into a bony ſcale; and this diſeaſe was internal likewiſe.

Finally, the cranium, at the occiput, and the poſterior parts of the ſinciput, was broken aſunder into fragments.

38. If I had choſen to attend to the principal cauſe of ſudden death, this hiſtory ought to have been propos'd in the preceding letter; for you ſee from the comminution of the cranium into fragments, and thoſe at the occiput, how great the concuſſion, not only of the cerebrum, muſt have been, but alſo of the cerebellum. Yet I choſe to defer it to the preſent letter, not only for the reaſon I mention'd before, but alſo on account of the great number of ribs which were fractur'd.

From that letter you have examples wherein we ſaw the ribs alſo, though much fewer in number, and indeed ſome of the vertebræ dorſi, to be broken. Therefore, we not only paſs by thoſe things here, but that wound of the wool-comber likewiſe, which is already deſcrib'd to you (*r*), and which was inflicted on the ſcapula, adding this one thing from anatomy; I mean, that we ought to take care, in wounds of that part, leſt the upper limb of the ſame ſide be agitated: for the motion of this limb prevents thoſe wounds from being eaſily brought to a cicatrix.

39. Before we treat, in the next letter, of wounds that relate to the belly, we muſt not omit here a wound which related to the belly and to the thorax at the ſame time; eſpecially as it began in the thorax, which is the part we are now ſpeaking of, and terminated in the ſame.

40. A taylor, of twenty years of age, was wounded by a foreigner, for a reaſon of very little conſequence, by a double-edg'd and pretty broad knife, in the lower part of his right ſide. This happen'd on the 24th of March, in the year 1742; that is, on the very day when the reſurrection of our Saviour was celebrated; a circumſtance that made the fact more heinous.

He did not fall down after receiving the wound. But being immediately brought into the hoſpital, which was at ſome diſtance from thence, he vomited in the way, and diſcharg'd the excrements both of the inteſtines and bladder. When he came thither, he was cold all over his body; he had no ſtrength, and no pulſe; or, at leaſt, his pulſe was very obſcure; and he ſcarcely could mutter over a few pious words. As the blood was diſcharg'd in very ſmall quantity, the wound was for that reaſon dilated; but he ſhow'd not the leaſt ſign of feeling. Therefore, after an hour, or a little more, from the infliction of the wound, he died without any difficulty of breathing, or any diſcharge of blood from the mouth.

(*r*) Epiſt. 16. n. 28.

Two

Two days after the death of this patient, we began to diſſect the body, accurately, in the ſame place, and continu'd the diſſection the ſix following days; as it was very proper for our purpoſe by reaſon of the ſize and habit, which you could neither call fat nor lean. I ſhall take notice here only of what relates to the wound, and any thing elſe which occurr'd unexpectedly.

The abdomen, which was neither tumid nor tenſe, and contain'd, nevertheleſs, ſuch a quantity of blood as I ſhall mention, being cut into, and laid open, the ſurface of all the viſcera appear'd to be ſlightly bloody. In obſerving the ſituation of theſe viſcera, and among the others of the omentum, we found that, as it deſcended from the right ſide obliquely to the middle of the belly, it was drawn up on the left ſide, and roll'd together, ſo as to cover the ſtomach; and then we immediately went on to the examination of the wound.

The knife had enter'd the lower ſide of the right cavity of the thorax, betwixt the ninth and tenth rib; and after having pierc'd through the fleſhy part of the diaphragm, near to thoſe ribs, had paſs'd through the neareſt ſide of the liver, having enter'd it on the convex ſurface, at ſome diſtance from the lower edge, by a fiſſure about two inches in length; but having come out on the concave ſurface at a fiſſure ſomewhat leſs: ſo that the whole paſſage of the knife through the liver was not longer, in general, than two inches.

After it had come out from the liver, it was forc'd through the right kidney, at ſome diſtance from the upper part, paſſing obliquely, in like manner, from the anterior to the poſterior ſurface, as in the liver; by a fiſſure which was almoſt one-half leſs in length than that in the liver. Finally, it had again pervaded the diaphragm, and had gone quite to the lower part of the cavity of the thorax, through the fleſhy part of this muſcle that lies behind the kidney: and, after having injur'd the trunk of the intercoſtal nerve, at the ſide of the twelfth vertebra dorſi, and a certain branch of the vena ſine pari; and after having gone through ſuch a number of other parts; it laſt of all wounded the neighbouring muſcles which paſs by the ſide of the ſpine: and theſe to the depth of an inch, or rather more, notwithſtanding ſo many parts had been already pierc'd through at one ſtroke. Therefore, altho' neither in the intercoſtal muſcles, nor in the diaphragm, nor in the liver, nor the kidney, nor in the ſide of the ſpine, nor in thoſe muſcles which I laſt of all mention'd, it had wounded any veſſel of a conſiderable ſize; yet it had cut into ſo many ſmaller veſſels, that within the ſhort time for which life continu'd, no leſs a quantity of blood ſeem'd to have been effus'd, than if the emulgent veſſels, or the vena portarum, or rather the trunk of the vena cava itſelf, all of which we found to be unhurt, had been wounded.

For, upon lifting up the inteſtines with the hands, a quantity of black blood was ſeen under them, and ſtill more in the cavity of the pelvis; ſo that moſt of the perſons who were preſent at the diſſection, ſeem'd to think that there were twenty pounds at leaſt: although, as it was ſo fluid that very few coagula could be obſerv'd therein, and as nothing of a polypous appearance was ſeen in the diſſection of the whole body, either in the veſſels, or in the heart itſelf, it is probable that it had alſo continu'd to flow from the incis'd veſſels after death, and that it had increas'd the quantity of that which had been extravaſated before death. This, at leaſt, is certain, that,

at the end of the fourth day after the death of the man, we ſaw, even then, blood diſcharg'd from the very extremity of the wound which we have deſcrib'd, at the ſide of the ſpine.

But whether part of the blood deſcended from thence, through the tranſfix'd diaphragm, into the belly; or whether, on the other hand, it aſcended into the thorax of the ſupine carcaſe from the belly; is not eaſy to determine. This, however, is certain, that before the thorax was open'd; when, after removing the viſcera of the belly, and exhauſting the blood, we examin'd the diaphragm; blood iſſu'd forth from the laſt wound of this part; and, by preſſing the hand upon that part of the diaphragm, ſomething was perceiv'd to fluctuate above this place: and a kind of croaking and ſound was heard, ſimilar to that which ariſes from flatus included in the inteſtines. And, finally, when the thorax was open'd, ſome quantity of blood was found in the cavity on that ſide; and the lobe of the lungs therein was drawn upwards to a conſiderable degree.

For this lobe was every-where unconnected to the pleura; whereas the left lobe was connected thereto anteriorly, and at the ſide, but particularly on the back-part. Beſides theſe things, there was nothing either in the thorax, or in the belly, that deſerves to be taken notice of here. For it was to no purpoſe that we look'd whether there was any thing bloody contain'd in the bladder, by reaſon of the wounded kidney; as the ſmall quantity of urine that was contain'd therein, was without any mixture of blood. But as to what we obſerv'd in the tunica albuginea of one of the teſtes, this has been already ſaid on a former occaſion (*s*).

Of the appearances, however, that I ſaw in the diſſection of the head, theſe things ought not to be paſs'd over; I mean, that the right vertebral artery, at leaſt within the cranium, was four times as wide as the left: and that within the dura mater, not only externally, but where it inveſts the lateral ventricles of the brain alſo, the veſſels were not diſtended with a ſmaller quantity of blood, than if the man had died of a phrenzy. So, alſo, in thoſe ventricles, each of which contain'd about a ſpoonful of clear water, the plexus choroides were of a blackiſh colour inclining to red.

So in whatever part the medullary ſubſtance was cut into, ſmall bloody drops diſtill'd here and there; and if you wip'd theſe away, and compreſs'd the cerebrum, other larger drops immediately burſt forth: and we thought it altogether ſurpriſing, what ſhould prevent the return of the blood from the cranium, unleſs we ſuppos'd ſome convulſive contractions to have been excited; in conſequence of the injury done to the trunk of the intercoſtal nerve; which retain'd the blood there, in ſpite of the great extravaſation thereof into the belly. And to theſe contractions you may alſo attribute the vomiting; although you, perhaps, have ſufficient cauſes in the wounds of the kidney and diaphragm, from whence to account for the exiſtence of this ſymptom.

41. But however theſe things might be; this you will, in particular, gather from the obſervation in queſtion, (and from others ſimilar thereto)

(*s*) Epiſt 43. n. 30.

that

that if any ſurgeons happen to be not very well ſkill'd in anatomy, they may fall into very grievous miſtakes, by ſuppoſing that wounds which enter betwixt the ribs, belong only to the thorax. That is to ſay, they are led aſide by not being well acquainted with the arch'd ſituation of the diaphragm; and never obſerving that the upper part of the belly is, therefore, contain'd betwixt the ribs, they do not, in the leaſt, ſuſpect, that the viſcera of this cavity may, at the ſame time, be injur'd by thoſe wounds.

This danger is ſo much the more increas'd, if there be any cauſe in the belly, which drives the diaphragm up higher than uſual: whether this be, as I have taken notice of in a fat woman (*t*), a quantity of pinguedinous matter, or of flatus, or of water, or even the bulk of the diſtended uterus, or of any other viſcus; as, for inſtance, of the liver; whereby, even in a natural ſtate, as I have already admoniſh'd (*u*), the right ſide of the diaphragm is frequently rais'd up. And the danger is ſtill greater, if the wound is inflicted upon a perſon when in a recumbent poſture, inſtead of ſtanding upright.

Nor do wounds of this kind occur ſo rarely, but I can remember four inſtances at leaſt; which you may add to the Sepulchretum; beſides one of Gliſſon's (*x*), that certainly ſhould have been inſerted there, by thoſe who compil'd and made additions to the Sepulchretum. The firſt is that of Mauchart (*y*), which is ſimilar to the one produc'd above, from Valſalva (*z*), in this circumſtance, that as much blood as was exhauſted from the thorax, ſo much immediately flow'd in thither, by the wound of the diaphragm, from the belly.

The ſecond is that of Goetzius (*a*). The third, of the celebrated Heiſter (*b*). And the fourth is that of Cramerus (*c*). And in all theſe caſes, in fact, the wound deſcended from the thorax, which it had firſt enter'd, through the diaphragm into the belly, and had perforated the liver. Moreover, on account of the ſame confirmation, and poſition, of the diaphragm, which I have mention'd, and its declivity towards the poſterior parts; it alſo happens, that if the wounds, inflicted upon the upper part of the abdomen, are continued to any conſiderable extent, not only the viſcera of the belly, but thoſe of the thorax alſo, will be wounded together with the diaphragm.

However, you ſee that wounds of this kind muſt be referr'd by us to the next letter; as we here attend to the part from whence they begin. You may therefore expect this letter ſhortly; and, in the mean while, farewel.

(*t*) Epiſt. 27. n. 2.
(*u*) Epiſt. Anat. 1. n. 13.
(*x*) Anat. Hep. c. 9. in fin.
(*y*) Eph. N. C. Cent. 1. Obſ. 19.
(*z*) n. 3.
(*a*) Act. N. C. Tom. 2. Obſ. 181.
(*b*) Diſſert. de Medicinæ Utilit. in Juriſprudent. n. 61. & ſeqq.
(*c*) Commerc. Litter. A. 1741. Hebd. 27. n. 1. ad cap. 2.

LETTER

LETTER the FIFTY-FOURTH

Treats of Wounds and Blows of the Belly, Loins, and Arms.

1. HAVING treated of wounds of the cheſt and back, it comes next in order to treat of thoſe that relate to the belly and the loins; and, that no others may remain, we will add thoſe alſo that belong both to the ſuperior and inferior limbs. Firſt, then, take theſe obſervations from Valſalva.

2. A young man, of two-and-twenty years of age, was run at by a cow, and was wounded with her horn about one of his groins. He had a fever; and by degrees his face, and the remaining part of his body, began to ſwell: yet the tumour could not be claſs'd with thoſe of the truly œdematous kind. Nothing occurr'd beſides this, that was worth notice, till the ſeventeenth day. And then a difficulty of breathing came on, with a kind of pain, and impediment at the fauces; which, to the patient himſelf, ſeem'd to be like a bolus: and he affirm'd, that if he could get rid of this, he ſhould be quite well in every other reſpect. Yet ſometimes, tremors of the whole body were obſerv'd by thoſe who ſat by him; and the tumour thereof, in the mean while, continu'd and encreas'd. At length, about the twenty-ſecond day from receiving the wound, death came on.

The wound being accurately examin'd in the dead body, began near the paſſage of the ſpermatic veſſels through the muſcles of the abdomen, and was continu'd betwixt the muſculus rectus, and the tendons of the obliqui, where a quantity of coagulated blood was found. But it did not reach into the cavity of the belly. In this cavity the inteſtines were much diſtended with air, and there was a great quantity of ſtagnant ſerum.

In the thorax alſo was a ſtagnating ſerum. However, the viſcera both of the thorax and belly were very ſound. And indeed, the muſcles, in ſeveral places, preſerv'd their natural ſolidity.

If the tumour, wherewith the body of this young man was diſtended, had any circumſtance attending it, which might make it referable to the claſs of emphyſematous tumours; it might be conceiv'd, from hence, that an emphyſema does not ariſe only from thoſe wounds that penetrate into the cavity of the thorax, or aſpera arteria. So even Bartholin, as you have it in this third ſection of the Sepulchretum (*a*), when an emphyſema had oc-

(*a*) Obſ. 20.

cupied

cupied not only the face but the whole body; could not, nevertheleſs, find a deep wound, and ſtill leſs one that injur'd any internal part.

But as to that pain and impediment about the fauces, you remember that I have already made mention of it (*b*), not only from Valſalva, but alſo from the obſervations of Wepfer: to which you may add others of Eberhardus Gockelius (*c*), of Elias Camerarius (*d*), and of Maurice Reverhorſt (*e*). If you examine all theſe obſervations, you will ſee that this impediment has particularly ariſen from wounds: and, indeed, that it has often been the forerunner of convulſions of thoſe parts, near to which this young man had been wounded; and theſe convulſions you ſee did come on, in this caſe alſo, under the appearance of tremors. And to the ſame cauſe was, perhaps, owing, not only the diſtention of the inteſtines, but alſo the effuſion of ſerum into the belly and thorax, by giving a check to the motion of the blood and lymph, in their progreſs.

4. A man, of forty years of age, was wounded by leaden ſhot, from a piſtol, at the margin of the right os ilium. At firſt no ſymptoms appear'd. But ſome days after a fever came on, with a very great rigor, and recurr'd every four-and-twenty hours: till about the fourteenth day, when he had been ſhort of breath for the ſpace of three days, the patient died; not without ſome ſuſpicion of the inteſtines being wounded, for this reaſon, that a matter had been diſcharg'd from the wound almoſt ſimilar to inteſtinal excrements.

Yet the wound had not penetrated into the cavity of the belly, and the viſcera of this cavity were all uninjur'd. The wound itſelf abounded with leaden ſhot, which had broken the margin of the bone, that I have mention'd, into ſmall pieces.

5. Although Valſalva has added to this obſervation, that he had ſeen another man, who died from a ſimilar wound in the ſame part, without any other injury which deſerv'd attention; and although you are not ignorant, what muſcles have their tendons ariſing therefrom, or terminating therein; yet you will be prevented from ſuppoſing this conſequence perpetual, by the obſervation of Meekrenius, which you even read in this ſection of the Sepulchretum (*f*). For "the ſpine, or appendix, of the os ilium, being "broken into ſeveral parts, by a bullet," the man not only liv'd for "twelve "weeks," as you have it in the Sepulchretum, "but for fourteen weeks;" and would not, to all appearance, have died even then, if the bullet had not injur'd other parts, and a ſudden and violent paſſion of the mind had not, laſt of all, come on.

6. A young man, of three-and-twenty years of age, was wounded at the diſtance of four fingers breadths below the navel. A vomiting follow'd the wound. From the wound came out a portion of the omentum, which, within a few days, was ſo chang'd in its colour and appearance, as to reſemble a firm and compact fleſh. In a ſhort time after the infliction of the wound, a diarrhæa came on. In the mean while, the abdomen preſerv'd its natural ſtate, if you except the upper part that correſponded to the ſtomach, which

(*b*) Epiſt. 15. n. 9.
(*c*) Eph. N. C. Dec. 3. A. 5. Obſ. 37. & 38.
(*d*) Ibid. Obſ. 41.
(*e*) Epiſt. inter Problem. Ruyſch. 14.
(*f*) in Additam. Obſ. 4. cum Schol.

became ſlightly tumid. To theſe ſymptoms were at length join'd, a difficulty of breathing, and a very frequent cough; together with an expectoration of purulent matter, and a very troubleſome pain in the right ſide of the thorax. And, after being tormented with theſe ſymptoms, the patient at length died.

The belly, being open'd, ſhow'd no mark of injury at firſt ſight. But by enquiring farther a purulent matter was ſoon after found, which ſtagnated on the right ſide, betwixt the membranes of the meſentery, and peritonæum, juſt as if it had been contain'd in a follicle. This matter extended itſelf from the lower part of the belly, under the liver, quite to the diaphragm.

The correſponding cavity of the thorax alſo, not only contain'd ſome of the ſame kind of pus, but was ſo fill'd therewith, that no ſooner was the knife forc'd into that cavity, in order to cut out the ſternum, but the pus ruſh'd forth with an impetus. In this pus lay the lungs, in a contracted ſtate, and inclining to a black colour. But about the right appendix of the diaphragm, was a pretty thick ſanies; ſo that, at this part, the pus ſeem'd to have paſs'd from the belly into the thorax, as if through a ſtrainer; as ſo great a quantity of it ſtagnated about this region, both above and below: but no evident paſſage could be obſerv'd.

The ſame quantity of extravaſated matter, join'd with a very filthy odour, not only prevented us from enquiring very diligently into this circumſtance, but alſo from enquiring whence ſo great a quantity of pus had proceeded; whether from a laceration of ſome of the meſenteric glands, and chyliferous veſſels, ſince no mark of injury could be found in the inteſtines, or elſewhere.

7. As he who had ſeen the young man when living, and diſſected him after death, I mean Valſalva, ſuppoſes that the wound had reach'd to the meſentery, in conſequence of the inteſtines, by their lubricity, eluding the point of the inſtrument; as muſt have happen'd, in thoſe who have been run thro' with a ſword, and cur'd in a ſhort time, with great ſucceſs, one of whom I have even ſeen in this hoſpital; nothing forbids us to conceive from whence the pus firſt began to be diſcharg'd.

But by what way it paſs'd from the belly into the thorax, is uncertain. For even in a man who lies in a ſupine ſtate, and not to ſay in one who has a great difficulty of breathing, and lies ſupine for this reaſon; as the thorax muſt be ſometimes, at leaſt, higher than the belly; it is difficult to conceive, that pus can be carried from the poſterior part of the belly, into the thorax, in ſuch a manner as to be collected there in ſo much more large a quantity, than in the belly.

Nor is it more eaſy to conceive of it, if you ſhould conjecture that it might be receiv'd into the circulation, and afterwards carried into the thorax: for why ſhould it be carried into the correſponding ſide of the thorax; and into that part which was neareſt to the part that it occupied in the belly; rather than into the other ſide, or into both, or into any other part of the body? Some things therefore muſt be ſuppos'd at a venture. But by this very circumſtance it appears plainly, that the caſe is, as I have ſaid, uncertain.

But in regard to the very great quantity of pus, you may either account for it from the ſame cauſe as Valſalva, and from a great quantity of fat in the

the meſentery; or you may ſuppoſe that by pus itſelf, the more pus is form'd, in proportion as it is more acrid, as was ſhown by that very frequent cough, and in proportion as it affects, or irritates, for a very long time, the parts within which it is contain'd, as it ſeems in this caſe to have done.

8. A certain man receiv'd a wound a little after ſupper, a ſharp inſtrument being forc'd through the epigaſtrium, a little to the left ſide, oppoſite to that rib, which is the third, if you reckon from the inferior parts. He immediately vomited; but what he brought up was quite free from blood: he diſcharg'd a conſiderable quantity of blood from the wound. Both of theſe ſymptoms return'd on the ſame night. In the morning the wound was in very violent pain; ſo that he could not bear the leaſt contorſion of body, without complaining. The day after, at the break of day, he got up out of bed, and what he had in vain attempted before, had an eaſy and natural ſtool. But when he went to bed again, he was ſeiz'd with a kind of ſudden ſwooning, and ceas'd to live; it being now ſix-and-thirty hours after receiving the wound.

In cutting into the abdomen, the muſcles about the wound were found to be every where embrew'd in blood, as it were, for a conſiderable ſpace; and the cavity of the belly, although the abdomen, when handled, had not been in the leaſt tenſe, was fill'd with extravaſated blood. Under the wound lay the omentum, and the inteſtinum colon, where it is connected with the ſtomach. The omentum had a ſlight injury: the inteſtine had none at all. But the ſtomach was perforated with a wound in the middle: and this wound was equal in breadth to the breadth of a filbert. But, although it was enquir'd with great accuracy, whether any other part was hurt beſides theſe, or whether any pretty large veſſel was incis'd; nothing was found to be injur'd, beſides the parts I have mention'd.

9. Why, although a great quantity of blood had flow'd down into the cavity of the belly; yet no blood appear'd, either by vomiting or ſtool, any more than if the ſtomach had not been perforated by the wound, you will learn from the ſcholium which is ſubjoin'd to an obſervation pretty ſimilar to this, that is the twenty-ſeventh (*g*), in this ſection of the Sepulchretum; and you will, moreover, learn other cauſes from the caſe of Gliſſon (*h*), which is very improperly omitted in the ſame place. But to that large effuſion of blood into the belly, the ſudden death is chiefly to be aſcrib'd; eſpecially as it follow'd a ſwooning.

However, that thoſe perſons die within a ſhort time, for the moſt part, who have no part of the ſtomach wounded beſide the fundus; perhaps even without this effuſion of blood; is not only to be argu'd from the nerves, wherewith the fundus is furniſh'd, in a great number, and from more than one origin, but is alſo clearly confirm'd by obſervations; that which was juſt now taken notice of from the Sepulchretum, being even ſet aſide, on account of the wound of the thorax, which was adjoin'd to it; as, for inſtance, by the next to it (*i*), and by others which, beſides theſe, are given by Bohn (*k*), and might be added to the Sepulchretum.

(*g*) § 1.
(*h*) Anat. Hepat. c. 9. in fin.
(*i*) § 2.
(*k*) De Renunc. Vuln. S. 2. c. 4.

And although this author, as well as the ſon of Etmuller alſo (*l*), recounts the cauſes, from which wounds inflicted on the ſtomach are not mortal ſometimes; yet neither of them is ſilent in reſpect to the contrary cauſes: that is to ſay, thoſe from whence death, for the moſt part, or frequently a great difficulty of ſucceeding in the cure, is the conſequence.

Turn to three examples, that you have, of the ſtomach being wounded, two of which are pointed out, from Cowper, in the *Acta Eruditorum Lipſienſia* (*m*), and the third you have in the *Commercium Litterarium Norimbergenſe* (*n*). But as to the great quantity of blood being effus'd beneath, and yet the abdomen not being tenſe, you will remember that this has been obſerv'd by me alſo, in the caſe of the taylor (*o*).

10. A young man, of twenty-five years of age, receiv'd two wounds with a ſword; the one about four fingers breadth below the xiphoid cartilage, but on the left ſide, that is to ſay, about the fourth and fifth rib, reckoning from the lower part upwards; the other a little below the hypochondrium, and on the left ſide, in like manner. At both wounds the omentum came forth. The wounded young man firſt went home: but being ſcarcely able to ſtand, when he came there, by reaſon of faintneſs; he was carried from thence into the hoſpital of St. Mary de Morte. There, if he attempted to lie down, he felt that a ſuffocation was coming on, for which reaſon he was oblig'd to breathe with his neck erect. In the mean while he vomited. He took nothing. At the thirteenth hour after receiving the wounds he died.

The belly and thorax being open'd, in both of them was found extravaſated blood, but not in great quantity. The inferior wound had alſo, in fact, penetrated into the very cavity of the belly; but had touch'd none of the viſcera. The ſuperior wound, however, had hurt the viſcera, both of the thorax and belly. For the left lobe of the lungs was a little incis'd at its lower and extreme part: but previouſly to this the ſword had paſs'd through the diaphragm, leaving a broad wound: and the upper part of the ſtomach was wounded on both ſides; whereby not only the cavity of this viſcus was fill'd with blood, but a paſſage had even been open'd for the ſtomach itſelf, through the diaphragm, ſo that it had paſs'd into the cavity of the thorax, together with a portion of the omentum.

11. Of wounds of the ſtomach we have written juſt now; and of wounds of the diaphragm we treated in the preceding letter (*p*). And although we have ſeen a wound of the diaphragm, join'd with wounds either of the heart (*q*), or of the liver and kidney (*r*), in that letter, we have not as yet, however, ſeen it join'd with a wound of the ſtomach, as in this caſe. Indeed, the beginning of thoſe wounds was in the parietes of the thorax; but the beginning of this in the belly: and the poſition of the diaphragm, which was made mention of in that letter (*s*), was the reaſon that the wound, proceeding from this beginning, communicated its injury to a viſcus of the thorax alſo; as beginning from the thorax likewiſe, it communicated its injury to the viſcera of the belly.

(*l*) In Programm. cit. ad n. 32. Epiſt. 36.
(*m*) A. 1699. M. Febr. in Relat. ejus Anat. ad Tab. 35.
(*n*) A. 1736. Hebd. 16. n. 4.
(*o*) Epiſt. 53. n. 40.
(*p*) n. 4. & 6.
(*q*) n. 3.
(*r*) n. 40.
(*s*) n. 41.

But

But as the obſervation in queſtion has this peculiarity in it, that the wounded ſtomach aſcended through the wound of the diaphragm; it is proper that we ſpeak a few words upon this caſe, which, though not very rare, is, however, not very frequent, as you well know.

The diaphragm conſiſting of a nervous, that is a tendinous part, and of a fleſhy part, which ſurrounds the other; and being naturally perforated by more than one foramen; is ſo interpos'd to the thorax and belly, that it lifts itſelf up, like an arch, into the cavity of the former, and no where with more declivity than at the poſterior part; and this moſt of all in man: for which reaſon Pechlinus (*t*) has admoniſh'd us, that in a wound which is inflicted upon the parietes of the thorax, at a conſiderable diſtance from the poſterior part; the diſcharge of extravaſated blood, or pus, is not only to be aſſiſted by the inflection of the body to the wound, but by inſpiration alſo; that is to ſay, that the more the diaphragm, which is then contracted, approaches to the figure of a plane, the leſs declivity there is to be overcome by the humours, which have flow'd down into that more declining and deeper poſterior part of the thorax.

And although the wounds of this very ſeptum are ſaid, by Hippocrates (*u*), to be "mortal;" yet from the words which Hippocrates has made uſe of, Galen (*x*) has admoniſh'd us, that thoſe are to be underſtood which are large and deep, not thoſe that are ſmall and ſuperficially inflicted; not even if they "are in the nervous part of the ſeptum:" for in this very part, he has not ſaid that theſe ſlight, but that thoſe large and deep wounds, "do not "coaleſce." And it it certain that you will ſee many examples produc'd, of wounds in the fleſhy part being cur'd: to which you may, moreover, add three even from Boſcus (*y*) alone.

But it is much more difficult to find equal examples of wounds in the nervous part. Yet, in the hiſtory remark'd by the father-in-law of Sennertus, the diaphragm being pierc'd through in the nervous part, you will, at leaſt, read this, that after a curative application of two months, the patient "had "ſeem'd to himſelf to be pretty well," for five months; if you examine Sennertus himſelf (*z*), inſtead of the Sepulchretum (*a*), wherein the ſame hiſtory is lamely copied in many particulars. However, wounds even of the fleſhy part, not to ſay of the tendinous part, in the ſeptum tranſverſum, are, for the moſt part, mortal, and that within a little ſpace of time.

Yet whenever the ſtomach is carried up through the diaphragm into the thorax, as it even happen'd in the caſe of Sennertus; it does not always happen through a paſſage open'd by a wounding inſtrument. For to omit mentioning the ſheep in which Peyerus (*b*) found a tranſverſe opening in the upper and fleſhy part of the diaphragm, bigger than the palm of a man's hand; this muſcle having been broken through by the very great diſtenſion of the ſtomachs, and one of them having been forc'd up out of the belly within the thorax; there certainly are places in the diaphragm, through which,

(*t*) Hiſt. Vuln. Thorac. art. 11.
(*u*) Sect. 6. Aph. 18.
(*x*) Comment. in cit. Aph.
(*y*) De Facult. Anat. Lect. 4.
(*z*) Medic. Pract. l. 2. P. 2. c. 15.
(*a*) l. 3. S. 8. Obſ. 27. § 1.
(*b*) Eph. N. C. Dec. 2. A. 4. Obſ. 100.

upon

upon the drawing aſunder of the fleſhy fibres, and upon the giving way of the membranes, the ſtomach, or ſome part of the inteſtinal tube, or any other viſcus, may paſs over from the belly into the thorax.

Thus (beſide the paſſage of the œſophagus of which I ſhall ſpeak afterwards) I ſee it is related by Platner (*c*), that ſome part of the colon, but a ſtill larger part of the omentum, and pancreas, was carried up through that paſſage which tranſmits one of the intercoſtal nerves; and this happen'd after very violent pains of the inteſtines.

Thus alſo, anteriorly, betwixt the fibres that come from the xiphoid cartilage and the neighbouring fibres, there generally is an interval through which ſomething ſimilar may happen: and I even ſuſpected this to have happen'd in a huſbandman, in whom I heard that Leprotti ſaw, at Rome, part of the inteſtine colon carried up, through the middle and anterior part of the diaphragm, in ſo great a quantity as to equal a ſpan, when extended.

But as I afterwards heard, from thoſe who had diſſected the body, that neither this inteſtine, nor the foramen, the diameter of which was two thumbs breadths, and through which this part went out and came in, ſhow'd any ſign of foregoing violence or diſorder, and that the man died in decrepit age, from a manifeſt injury within the ſkull; I choſe rather to ſuppoſe that it had been thus from the original formation; in the ſame manner as Chauvet (*d*) ſuppos'd it to have been in the caſe of the military officer, in the left cavity of whoſe thorax, beſides the ſtomach and one half of the ſpleen, was a part of the inteſtine likewiſe that has been mention'd; which, however, did not return by the ſame foramen that it enter'd, but by another: and the cartilaginous borders of theſe foramina adher'd cloſely to the viſcera, which paſs'd through by themſelves.

You will alſo ſee, that Riverius (*e*), Bartholin (*f*), and Clauderus (*g*), had the ſame opinion in regard to two others, if you read the whole paſſage of Bartholin from the beginning to the end; for the beginning of it is omitted in the Sepulchretum. He and Clauderus ſpeak of one and the ſame perſon: but the latter mentions many things of him when living; the former ſpeaks of the body after death. The ſum of the obſervation is, that the ſtomach, the omentum, a little part of the pancreas, and a pretty large part of the inteſtinum colon, had lain hid in the left cavity of the thorax: and this part of the colon, together with the duodenum, came out at the ſame foramen by which it enter'd; this foramen being large in its ſize, and circumſcrib'd by a nervous circle, which was open'd in a peculiar manner in the ſubjected diaphragm, that was wholly fleſhy.

The other young man, deſcrib'd by Riverius, had only the ſtomach in the thorax, but this on the right ſide; which part of the thorax, as it was without any lungs, ſhow'd this to have been the ſtate of the parts from the very birth. By what paſſage the inteſtine duodenum came out through the ſeptum tranſverſum, Riverius has been ſilent. Theſe things, however, he has made known, that the young man, during the whole courſe of his life, had not

(*c*) Diſp. de Hydrocel. not. φ ad § 2.
(*d*) Hiſt. de l'Acad. R. des Sc. A. 1729. Obſ. Anat. 2.
(*e*) Sepulchr. Obſ. 27. cit. § 2. cum Schol.
(*f*) Ibid. § 3.
(*g*) Obſ. 12. in Addit. ad cand. Sect.

been " very much " oppreſs'd with a difficulty of breathing; for ſo it ought to have been ſaid in the Sepulchretum alſo; and that the moſt violent ſtrainings to vomit, from the taking of antimony, were entirely without effect; the ſtomach being, as Riverius ſuppos'd, prevented from diſcharging itſelf by the ribs that were around it.

As to the young man of whom Clauderus and Bartholin ſpeak, he had always enjoy'd a free and eaſy reſpiration; if you except a ſudden and ſpeedily evaneſcent aſthma: and this young man died in the midſt of almoſt infinite vomitings; although the ſtomach, being connected by ſome very ſtrong bandages to the diaphragm, and that neighbourhood where it was join'd with the gula, reach'd, with the other part of it that was turn'd upwards, almoſt to the clavicles; occupying nearly the whole cavity of the thorax wherein it was included.

What ſymptoms an infant of two months old was troubl'd with, who was in an ill ſtate of health from the very birth, and in whom, after death, Carolus Hultius found almoſt all the inteſtines, together with the meſentery, carried up into the thorax, through a foramen form'd by nature in the diaphragm, on the left ſide of the foramen of the gula, you will learn from the *Acta Eruditorum Lipſienſia* (*b*).

And I ſhould alſo ſuppoſe that the fiſſure of the diaphragm, through which the celebrated Stehelinus (*i*) ſaw the ſtomach, the ſpleen, a part of the liver, of the inteſtine duodenum, and omentum, carried up into the left cavity of the thorax, in a fœtus, was from nature herſelf; I ſhould ſuppoſe ſo, I ſay, as the left lobe of the lungs conſiſted only of one lobule, and was three times leſs than the right lobe.

I purpoſely omit what viſcera of the belly have been ſeen in the thorax of other fœtuſſes, which were quite monſters in their formation; as in one of a ſow, and in two human fœtuſſes, by a certain anonymous author (*k*), by Lemery (*l*), by Vernoyus (*m*); and that all, in general, ſaw the diaphragm perforated. For the intention of my diſcourſe requires, that I ſhould return to thoſe bodies in which not the firſt conformation, but the effects of diſeaſe, and particularly wounds, have forc'd the ſtomach, or any other viſcus, into the thorax.

12. The obſervation of Littre (*n*) ſhows that there were, beſides a difficult reſpiration, frequent but ineffectual ſtrainings to vomit, in a dog whoſe ſtomach had gone out into the thorax by the ſame foramen through which the gula enters. And two circumſtances ſhow'd this not to have been ſo naturally; the firſt, the length of the gula itſelf, which has not been obſerv'd by others, I mean, in ſo great a degree; for when he ſoon after replac'd the ſtomach in its natural ſituation, the gula gave no reſiſtance at all thereto: the ſecond, a large fiſſure, into which that foramen of the diaphragm had been enlarg'd whereby the ſame gula is wont to paſs, but the inteſtine duodenum then

(*b*) A. 1702. M. Decembr.
(*i*) Tentam Medic. th. 3.
(*k*) Zodiac. Medic. Gall. A. 4. M. Febr. Obſ. 14.
(*l*) Mem. de l'Acad. R. des Sc. A. 1724.
(*m*) Comment. Acad. Sc. Imp. Petropol. Tom. 3.
(*n*) Hiſt. de l'Acad. R. des Sc. A. 1706. Obſ. Anat. 10.

paſs'd

paſs'd through; which fiſſure had already contracted a cicatrix a long time before.

Littre ſuppos'd the diaphragm to have been thus fiſſur'd, either from ſome very violent convulſion of the œſophagus, drawing the ſtomach upwards, or from a contraction of the diaphragm, and the muſcles of the abdomen, at the ſame time; which contraction the ſtomach, at that time, perhaps, fill'd with ſolid aliments, as is often the caſe in a dog, had aſſiſted.

And I thought it proper not only to take notice to you here of many things from the authors above-mention'd, but particularly of theſe things from Littre, that, by comparing them together, you may the more eaſily underſtand, whether different inſtruments of vomiting have been wont to be propos'd by different perſons with propriety, or not; either when the ſtomach is in the thorax, and has been plac'd there in the original formation, or has been driven up thither by the force of diſeaſe: or, finally, to omit other things in this place which are to be touch'd upon hereafter, that you may conceive by what cauſes it is driven thither.

For as to its ſeeming to a very great man, in this our age, that the force wherewith the muſcles of the abdomen urge the viſcera of the belly upwards in expiration, may be eſtimated from hence, that they dilate a very ſmall wound inflicted on the ſeptum tranſverſum, to ſuch a degree, as to let the ſtomach paſs up into the thorax this way; you doubtleſs perceive that, probably forgetting the explication of Littre, he aſcrib'd to theſe muſcles alone the whole of that effect, which he ought, unleſs I am deceiv'd, to have aſcrib'd in part to thoſe muſcles, and in part to that ſeptum being drawn downwards with great force; eſpecially while, by means of a convulſion, or any endeavour in reſtraining reſpiration, it acts in concert with them.

However, if a wound happen to be inflicted in ſuch a manner as to enlarge the foramen through which the œſophagus paſſes, it is evident that leſs power is ſufficient to produce the ſame effect. And in this manner the wound had happen'd in a ſoldier, in whom Glandorpius (*o*) found that the left part of the ſtomach had aſcended through the ſame œſophageal paſſage, together with a portion of the duodenum, and inteſtinum colon: and this ſoldier had been carried off by pain, and hæmorrhage, a very great ſyncope, with an interception of reſpiration, and a ſingultus.

And it may even happen, that there is ſometimes need of leſs force; that is to ſay, in a man in whom this œſophageal paſſage is of itſelf pretty wide, as I have told you that it was ſeen by me in a certain ſhoemaker (*p*). There is, on the other hand, when a force is requir'd either for a long time, and repeatedly, or in a very powerful degree; whether this ſame paſſage, or any other that is not ſufficiently open'd by a wound, is to be overcome. It was repeated for eight days, in the caſe of that man in whom Henricus ab Heer (*q*) ſaw that the ſmall inteſtines had crept into the thorax by a "very "narrow" wound of the diaphragm; as this patient did not feel the ſymptoms that ſhow'd ſuch a ſtate of the parts till the ninth day: and they became fatal within four-and-twenty hours.

(*o*) Sepulchr. S. hac 3. Obſ. 21. § 9.
(*p*) Epiſt. 37. n. 30.
(*q*) Sep. Obſ. cit. § 3.

And

And this force was, perhaps, repeated for five months together, in that ſtudent of whom we made mention above (*r*) from Sennertus; for, at the completion of theſe months, he at length began to be in an unhealthy ſtate: and ſome days from thence, after frequently-repeated vomitings, and the moſt fatal ſymptoms, he died: ſo that, although there is ſome proof of not a ſmall part of the ſtomach having enter'd the left cavity of the thorax ſeveral months before, when the wound was inflicted, and having forc'd the heart into the right ſide, where it was found; for the patient himſelf "deſir'd them "to take notice of the pulſation being there, after the wound was receiv'd;" yet there is ſome room to believe "that the whole of the ſtomach," the omentum, and the whole pancreas, had not aſcended thither till the latter part of his life.

And there is ſtill more room to believe this in that military officer, in whom, if you look into the Sepulchretum (*s*), you would ſuppoſe that Henricus ab Heer, who was ſpoken of juſt before, but if you read Parey (*t*), you would know that Guillemæus, had found a great part of the inteſtine colon driven up into the thorax, through a wound ſcarcely able to admit a little finger, which paſs'd through the fleſh of the diaphragm. For although a pain of the inteſtines us'd to attack him about the evening, yet it was not till the eighth month after receiving the wound, that it increas'd to ſo ſevere a degree as to make every remedy ineffectual, and to carry off the patient.

And if it is not the ſame caſe, which you will ſee transfer'd into the Sepulchretum (*u*), from Ballonius; as that pain is not ſaid to have begun till a year after; there ſeems to have been occaſion for a much more long-continued impulſe, in order to carry that larger part of the colon through the diaphragm; after the leſſer portion had "gradually" enter'd, as Ballonius himſelf thought. And certainly that celebrated man Fantonus, in the ſcholium to his father's twenty-third obſervation; of a young-man, who had been wounded a year before; does not think that the ſtomach, which had paſs'd into the cavity of the thorax, by being thruſt through the diaphragm; that was torn aſunder where the œſophagus is tranſmitted through it; came thither before it had been contracted by pains, and vomitings, which took place from the time of inflicting the wound: and that being forc'd, thereby, againſt the diaphragm, it was, at length, able to tear it aſunder; and, by this means, open a ſufficient paſſage for itſelf.

And he wiſhes that which I alſo have wiſh'd for, every now and then, in many obſervations of this kind, not even altogether excepting that of Valſalva; I mean that ſome things had been farther remark'd, in regard to the conditions of the tranſmitted viſcus, or the tranſmitting ſeptum; and amongſt theſe we place both the ſituation of the viſcus, and of the wound, as in the hiſtory of Cloſſæus (*x*); which ſhows, indeed, that the upper part of the inteſtine colon, which was neareſt to the ſtomach, lay above the diaphragm, to the length of a ſpan: but in what part this muſcle was perfo-

(*r*) N. 11.
(*s*) Obſ. cit. § 4.
(*t*) Oper. l. 9. c. 30.
(*u*) L. 3. S. 14. Obſ. 8. § 8.
(*x*) Sepulchr. cit. Obſ. 8. § 10.

rated, and in which cavity of the thorax the inteſtine was receiv'd, we are not at all inform'd.

Yet as he aſſerts, that the man felt no injury "in the natural or vital fa-"culties," for the whole ſpace of two years after receiving his wound, till being ſeiz'd with a colic paſſion, he was carried off from among the living; it would have been natural to ſuppoſe, that the inteſtines, which were found to be "inflated, as if by means of bellows;" making an impetus upon the wound, had then, at length, laid open a paſſage for that portion of the colon; or, at leaſt, for the greater part of it; if, by ſaying, that I know not what "had been found to be conſolidated," he had not left us doubtful whether he ſpeaks of the colon being ſomewhat wounded, or of the diaphragm.

But of the long-repeated force enough; now let us add examples of the force being very powerful.

13. It is certain, that in the firſt of all the obſervations, of the ſtomach being forc'd up within the thorax, which was made by Parey (*y*) upon a ſtone maſon, the power, whereby it was impell'd, was very great. For through the wound of the tendinous part of the diaphragm, which was ſcarcely equal to a inch in breath, was it found to be driven, three days after the wound had been inflicted. And Bartholin (*z*), found not only the ſtomach there, but alſo a part of the other viſcera, and particularly of the ſpleen, in an obſervation which is, in moſt circumſtances, ſimilar to that we have given you from Valſalva.

For, in both of them, the ſtomach, and lungs, were wounded, together with the diaphragm, and death happen'd on the third day: ſo that, conſidering the time, the power appears to have been, without doubt, very great; although we are in neither of them inform'd, what part of the diaphragm was wounded; nor in that of Bartholin whether the wound was narrow or wide; nor, of conſequence, how great a reſiſtance there was, in the diaphragm, to be overcome by the impelling viſcera.

But in the caſe of Schoberus (*a*) we are not wanting in theſe particulars, which caſe was ſo much the more violent, as, without any wound, a very vehement cardialgia came on, in the morning, at break of day; attended with very frequent vomitings, of an incredible quantity of blackiſh matter, and with ſtrainings to vomit, ſo that the young man died on the following night: and within his thorax was found, together with the omentum, and inteſtine duodenum, with the jejunum, and a part of the ileum, the ſtomach ſo diſtended with that matter, and with flatus, as to compreſs, into a very narrow compaſs, the heart and the lungs; having been admitted into that cavity, by the ſame foramen through which the gula is brought down, this foramen "being greatly dilated and depriv'd of its tone."

And if you remember thoſe things that I have hinted at above (*b*), with Littre, and Fantonus, you will not doubt but this may happen. For when the motion of the fibres of the œſophagus, the ſtomach, and inteſtines, is

(*y*) Sep. l. 4. S. hac 3. Obſ. 21. § 7.
(*z*) Ibid. Obſ. 20. § 2.
(*a*) Eph. N. C. Cent. 3. & 4. Append. n. 12. c. 1.
(*b*) n. 12.

inverted,

inverted, by evident convulſions of the fibres; it is natural to conceive, that, the ſtomach; being carried upwards by the œſophagus, and at the ſame time (*c*) the matter being preſs'd downwards, out of the aſcending ſtomach, by the fleſhy faſciculi of the diaphragm, which are not yet very much weaken'd, and which intercept that foramen; is carried up in an empty ſtate, and thoſe inteſtines in the ſame manner: till the force of the inverted motion being continued, and encreas'd, the matter is driven ſtill upwards, and upwards, from the lower parts, ſo as to overcome the reſiſtance of theſe faſciculi, and diſtend the ſtomach.

And now you have almoſt all the examples, of the viſcera being carried up through the ſeptum tranſverſum into the thorax, which were in my hands at this time of writing; ſo that you may compare them with the obſervation propos'd by Valſalva: I ſay, almoſt all. For as to that whch I might have quoted from Valentinus (*d*), of the omentum having fallen through a foramen, formerly made in the diaphragm of a dog, into the thorax; it is not only a very inconſiderable caſe, but without any mention of the ſituation of that foramen, or of the ſymptoms.

That obſervation of Beckerus is of more importance, indeed, and mentions the ſymptoms; but is quite ſilent as to the ſeat of the foramen, as far as I can gather from the *Acta Eruditorum Lipſienſia* (*e*). This obſervation is from a child of four years of age, whoſe ſtomach, ſpleen, and liver, were in the left cavity of the thorax, for two years together, as I ſuppoſe; for it had paſs'd the firſt two years of its life in tolerably good health. Nor does the obſervation of Carolus Piſo, *De Morbis a Sero*, "ſection the ſecond, part "the ſecond, and chapter the ſeventh," of a very great tumour of one of the kidnies, relate to this ſubject, as ſome ſeem to believe. For if it is that, as I ſuppoſe, which is extant in that ſeventh chapter of Piſo, which is quoted, and under number forty-ſix; he indeed deſcribes the ſeptum tranſverſum as having been driven upwards by the tumour of the kidney; but not as having been perforated.

Yet this muſcle was perforated, by the eroſion of a large cancerous tumour of the pancreas, which had thruſt part of itſelf into the left cavity of the thorax, in the obſervation of Hertodus, which is transferr'd into the Sepulchretum in another place (*f*). But to lay aſide my ſuſpicion, which I have made known to you, in regard to that obſervation, on a former occaſion (*g*); you have, therein, more than ſufficient of different cauſes, whereby to explain whatever had preceded, and the ſudden death itſelf.

At length, when I revis'd this letter, I happen'd to light on that diſſertation, which is the ſixty-ninth among thoſe chirurgical ones collected by the very excellent Haller; and as I took notice that ſome of the examples, I have mention'd here, were wanting therein, ſo I obſerv'd, that there were ſome, which, either on account of my being without the books, or by reaſon of the language in which they are written, I could not have inſpected. You will, therefore, read them in that diſſertation, and particularly the caſe

(*c*) c. 2. § 18.
(*d*) Eph. N. C. Dec. 3. A. 2. Obſ. 124.
(*e*) A. 1706. M. April.
(*f*) l. 3. S. 22. Obſ. 40.
(*g*) Epiſt. 40. n. 27.

of that girl of Straſburg (*b*), whoſe ſymptoms and wound are deſcrib'd: for by this wound ſhe was principally carried off in a few hours; it being in the tendinous part of the diaphragm, and a portion of the ſpleen and ſtomach having enter'd the thorax, and forc'd the heart to the right ſide.

Moreover, I knew that four other examples, to appearance, are read in Blancard (*i*). But if you compare them with thoſe that are produc'd above by me, you will ſee plainly that they are, in fact, the ſame with as many of them; although they are chang'd by a transformation which we cannot very eaſily bear: as, for inſtance, that ſtudent ſpoken of by Sennertus, into a certain native of Revel (*k*); the ſon of D. Rat, in Riverius, into a ſoldier (*l*); the ſtone-maſon, in Parey, into the ſervant of a certain ſmith (*m*); and the military officer, ſpoken of by the ſame author, into the ſervant of a certain captain (*n*).

And as theſe two laſt changes are plac'd by Blancard in the very beginning of his book, it is not to be wonder'd at, that they have impos'd upon many candid and ſincere men, who judge of others by themſelves; and, therefore, ſuppoſe them to be honeſt before they find them otherwiſe, and ſuſpect no ſuch fraud: and, amongſt theſe, it is not ſurprizing that he ſhould have impos'd upon Bohn (*o*); ſo that, together with the two obſervations juſt now referr'd to in Parey, he has quoted the firſt and ſecond of Blancard, as if not made out of them.

But from wounds of the abdomen let us go on to other examples of compreſſions, or concuſſions, of this part, which we may copy from the papers of Valſalva.

14. A man, of five-and-thirty years of age, was kick'd on the abdomen by a horſe; from whence being ſeiz'd with cruel pains and vomiting, he was receiv'd into the hoſpital of St. Mary de Vita. And there, his pains continuing, with a ſenſe of great weight in the lower part of the belly, and with a difficulty of breathing, he died.

The carcaſe, being diſſected by Valſalva and Peter Molinelli, although it ſhew'd no contuſion in the muſcles of the abdomen which correſponded to the place of the injury; yet, when the belly was open'd, exhibited a very large quantity of extravaſated blood, which had already begun to be corrupted. The ſanguiferous veſſels which paſs through the omentum were ruptur'd; and the inteſtine ileum, which lay beneath the omentum, was quite cut aſunder, almoſt tranſverſely.

In the thorax, the lungs were affected with a very great inflammation: and there was a conſiderable polypous concretion in the right ventricle of the heart.

15. That the parts which are confin'd in the abdomen ſhould be ruptur'd, without the abdomen itſelf, which firſt meets the blow, being at all injur'd, is by no means new or unuſual. Thus Tulpius (*p*) twice, thus Fontanus (*q*),

(*b*) § 4.
(*i*) Anat. Pract. Ration.
(*k*) Cent. 2. Obſ. 9.
(*l*) Cent. 1. Obſ. 70.
(*m*) Ibid. Obſ. 2.
(*n*) Ibid. Obſ. 1.
(*o*) De Renunc. Vuln. S. 2. c. 4.
(*p*) Sepulchr. S. hac 3. Obſ. 29. § 9. vel potius 8.
(*q*) Ibid. § 11.

thus

thus Graſſius (*r*), thus Raygerus (*s*), ſaw the ſpleen ruptur'd; the three firſt from a blow of a ſtick, the laſt from a fall: to which hiſtories, that are propos'd in the Sepulchretum, you may add others alſo; as that which is extant in the Commentaries of the Imperial Academy at Peterſburg (*t*), and that you meet with in the celebrated Heiſter (*u*). For both of them ſhow the ſame viſcus to have been ruptur'd, and the ſame very great effuſion of blood from thence into the cavity of the belly; the former from the blow of a man's fiſt, the latter from the kick of a horſe. And that the ſame thing had happen'd in two others, by a ſimilar kick of a horſe, you will learn from the *Commercium Litterarium* (*x*). And Bohn (*y*) had reported the ſame thing to have been found in as many others, but from the blow of a ſtick.

Nor are other examples of the ſame kind wanting from blows of any kind, and among theſe from a fall, which have been remark'd by Peter Albrechtus (*z*), Gotth. Budæus (*a*), Lucas Schrockius (*b*), Hieronymus Laubius (*c*), and Johannes Storchius (*d*). And if you deſire others, beſides theſe, you will read two in Hoffman (*e*); and where you may look for two more, the *Commercium Litterarium* will ſhow you (*f*); and where you may, moreover, find ſtill others, you will learn from Platner (*g*): and you will perceive that it is not without reaſon the laſt-mention'd author has ſaid, that by a violent compreſſion of the abdomen, the included "viſcera are ruptur'd and lacerated, "in ſuch a manner that, all the blood being effus'd, death is ſoon the con-"ſequence. And it is found by experience, that this happens more fre-"quently in the ſpleen than in any other viſcus."

Nor is this to be wonder'd at, if you attend to the ſoft ſtructure thereof, and the thinneſs of the coat wherewith it is inveſted. But if it become ſofter by the force of diſeaſe, and, by a quantity of ſlowly-circulated blood, is extended below the fortification of the ribs, it is ſo much the more eaſily ruptur'd; and pours out in leſs time the greater quantity of blood: and conſequently brings on a more ſpeedy death. And it even appears that this viſcus, being become tumid, and almoſt "pultaceous," in a certain count (*h*), was of itſelf ruptur'd, and became the cauſe of ſudden death.

But in the kidnies, in proportion as the ſtructure is more compact, ſo much more reaſon is there for being ſurpriz'd, when we read, in the obſervation quoted from Laubius, that, by reaſon of an external compreſſion by a fall from on high, not only "the ſpleen was contus'd quite to rupture," but alſo that "a foramen, capable of admitting two fingers," was found "on the "back of the left kidney;" or in Mauchart (*i*), that "a very violent and

(*r*) Ibid. in Addit. Obſ. 31.
(*s*) Ibid. Obſ. 30.
(*t*) Tom. 1. in Obſ. Anat.
(*u*) Inſtit. Chir. P. 1. l. 1. c. 15. not. ad n. 6.
(*x*) A. 1736. Hebd. 16. n. 4. & A. 1740. Hebd. 21. n. 1.
(*y*) De Renunc. Vuln. S. 2. c. 4.
(*z*) Eph. N. C. Dec. 3. A. 9. Obſ. 6.
(*a*) Earund. Cent. 1. & 2. Obſ. 108.
(*b*) In Schol. ad eand. Obſ.
(*c*) Act. N. C. Tom. 2. Obſ. 21.
(*d*) Commerc. Litter. A. 1731. Specim. 36. n. 2.
(*e*) Medic. Rat. Tom. 3. S. 1. c. 7. § 34.
(*f*) A. 1738. Hebd. 32. n. 1. ad Part. 4, & 5.
(*g*) Inſt. Chir. § 717. not *a*.
(*h*) Act. N. C. Tom. 5. Obſ. 125.
(*i*) Diſſert. de Mydriaſi, § 32.

"forcible

" forcible impulſion of a round, and not ſharp, ſtick, againſt the abdomen, " without any ſolution of continuity," was the cauſe, " nevertheleſs, of the " middle of the kidney, which was ſituated oppoſite to the part that re- " ceiv'd the violence, being burſt, and proving fatal."

And now that I have happen'd to ſpeak of the viſcera which ſerve for the ſecretion of urine; read, I beg of you, the obſervation of Theodore Zuinger (*k*), which gives you, with a great degree of accuracy, the ſymptoms and the diſſection of a young man; who, having chanc'd to run violently, in the night, with his hypogaſtrium againſt the prominent branch of a tree, had not, indeed, the leaſt mark of external injury therefrom, but unhappily got a rupture of his bladder, which was at that time full of urine.

However, not entirely to omit what happens to the other viſcera; Heiſter, whom I have ſpoken of above, has produc'd two obſervations (*l*), beſides that I pointed out before: the one of the viſcera of the belly, which were found to be greatly contus'd and lacerated by very violent blows of a ſtick, though the ſtick was but ſlender; the other, in which he found the middle part of the liver perfectly ruptur'd by the force that had been applied from without; though, externally, not the leaſt mark of injury was ſeen.

Platner (*m*) will alſo give you an example of the liver being ruptur'd, and another you may take from the *Commercium Litterarium* (*n*); from whence (*o*) you will, moreover, have a third, of a man being violently ſtruck by a horſe in the region of the liver: ſo that the lower ribs were broken, and the gibbous part of that viſcus was cleft, with a great number of fiſſures, not very deeply however, as I ſuppoſe; ſince the belly was not fill'd with blood, but with a great deal of bloody lymph: and the patient did not die before the fourth day: ſo that it recals to my mind that hiſtory of Hippocrates (*p*); " A boy, " who receiv'd a kick from a mule on his belly and liver, died on the fourth " day;" although this boy, as you ſee, was alſo ſtruck on the ſtomach, and had very different ſymptoms: all of which being attended to by that grave interpreter Valleſius (*q*), he judg'd that the boy died from the very acute inflammation of thoſe viſcera, and not from the rupture, or the effuſion of blood.

And, certainly, if there had been a great effuſion of blood, both reaſon, and the obſervation of Lanzonus (*r*), ſhow us that death muſt have come on very ſpeedily. For he who was ſtruck with a fiſt, violently, upon the liver, and had in his belly " an extravaſation of blood, and a rupture of the veſſels " in the liver, fell down upon the ground ſoon after receiving the blow, and " expir'd in a miſerable manner."

To this ſubject, alſo, would relate the hiſtory of a boy of ſeven years of age (*s*), who had been trampl'd upon; as he lay upon the ground with his face upwards; in ſuch a manner, by horſes which drew a chariot, that blood was extravaſated from the liver, which was ruptur'd and lacerated on the

(*k*) Eph. N. C. Cent. 7. Obſ. 30.
(*l*) Not. cit.
(*m*) Not. cit.
(*n*) A. 1738. Hebd. 32. n. 1. ad Part. 5.
(*o*) A. 1734. Hebd. 35. n. 3.
(*p*) Epid. l. 5. n. 17.
(*q*) Comment. in hanc hiſt. quæ ipſi 38.
(*r*) Act. N. C. Tom. 2. Obſ. 6.
(*s*) Commerc. Litter. A. 1740. Heb. 52. n. 3.

right

right ſide, into the whole cavity of the belly, though this was externally unhurt; if other cauſes of the death which immediately follow'd, had not been found, at the ſame time, both in the thorax and in the neck.

But to come nearer, finally, to the obſervation of Valſalva, which has deſcrib'd the ſanguiferous veſſels of the omentum, and the inteſtine ileum, as being ruptur'd; the ſame veſſels, in a woman who was ſtruck by a ſoldier, and who died ſuddenly after the whole belly was fill'd with extravaſated blood; the ſame veſſels, I ſay, were ſhown to be ruptur'd, in this woman, by the ſmall coagula and grumous concretions of blood which were included within the duplicature of the omentum; as you will read in the Peterſburg Commentaries juſt now referr'd to (*t*); where it is indeed ſaid, "that, in this "very extraordinary caſe of injury, this perhaps ſhould be taken into con- "ſideration, that, contrary to the cuſtom of nature, the omentum had grown "into one ſubſtance with the fundus uteri:" yet the obſervation of Valſalva ſhows this to have been by no means neceſſary.

But as to what relates to the inteſtine which was ruptur'd by the kick of a horſe, you may compare with this obſervation that of Kramerus (*u*) on a carman who died from the ſame cauſe, but not at the ſame time, nor from the ſame internal injury alone; unleſs you ſhould ſuſpect that the rupture of the inteſtine ileum is rather to be attributed to a gangrene of the inteſtines; as that hiatus, which was obſerv'd in a young man who died not many days after his maſter had ſtruck him violently upon his belly with a ſtick, ought, without doubt, agreeably to the opinion of Helwick (*x*), to be aſcrib'd to the ſphacelus wherewith the colon and ileum had been affected.

Yet even without theſe, you have in the Sepulchretum (*y*), not only the inteſtine jejunum ruptur'd, from very violent tramplings of the feet upon the loins and back of a man, when proſtrate; but you have alſo the ileum and the colon perforated, in more than one place, from a very violent daſhing of the abdomen againſt the trunk of a tree, in another (*z*); although the abdomen was ſound in both of them.

Do not, however, be ſurpriz'd that, although the abdomen of a woman, who has been deſcrib'd to you in a former letter (*a*), was ſtruck with a ſtick, and the moſt violent ſymptoms were the conſequences of the blow, ſhe nevertheleſs complain'd of a pain in this part only; and that nothing was found to be injur'd within the abdomen, and ſtill leſs any thing ruptur'd. For all blows are not inflicted with the ſame degree of force; nor are the inteſtines equally liable to rupture in all perſons: either from their natural propenſity; as Ariſtotle has aſſerted (*b*), that ſtags "have their inteſtine ſo thin and weak, "that although you ſtrike the abdomen but ſlightly, it may be ruptur'd, "without any rupture of the ſkin;" or from repletion.

And, certainly, in both of thoſe whoſe hiſtories I have juſt now pointed out from the Sepulchretum, the inteſtines were then extremely fill'd, and

(*t*) Tom. cit. ibid.
(*u*) Commerc. cit. A. 1740. Hebd. 26. n. 2.
(*x*) Eph. N. C. Dec. 3. A. 9. & 10. Obſ. 120.
(*y*) In Addit. ad hanc S. Obſ. 25.
(*z*) L. 3. S. 14. Obſ. 47.
(*a*) Epiſt. 49. n. 6.
(*b*) Hiſt. Animal. l. 6. c. 29. in fin.

diſtended

diſtended beyond their uſual degree, by too great a quantity of fluid; as you will learn from the reading of the obſervations, and from the ſcholium, moreover, which is added to the firſt. You, therefore, if at any time you know that, beſides the violence of the blows upon the abdomen, there was at that time a diſtenſion of the inteſtines, from any cauſe whatſoever; and very conſiderable and peculiar ſymptoms come on; will ſuſpect what might happen inwardly, although you ſee no mark of injury in the ſkin: and if you are able to do nothing elſe, you will at leaſt declare you ſuſpicion to thoſe whom it may concern, and that cautiouſly and with diſcretion.

And, indeed, if there has not been that diſtenſion, and thoſe ſymptoms do not immediately come on; do not then be without all fear, leſt ſome latent evil gradually increaſe, and the ſymptoms thereof break out univerſally and unexpectedly. Plancus has, with great propriety, ſaid to M. Tullus (*c*): "I cannot help being in dread, if there be any thing of a wound under the "ſkin, which may do much miſchief before it can be known and cur'd." Read the obſervation of Loſpichlerus (*d*), and you will perceive that what I ſay is true. For you will ſee what kind of fatal diſorder at length aroſe about the fundus of the ſtomach, in a man who, many years before, had fallen down with his horſe; and who, though he felt a violent "compreſſion "of the ſaddle upon his ſtomach," had, nevertheleſs, totally neglected it.

And Platner (*e*) has, with great propriety, admoniſh'd us, that ſcirrhi frequently ariſefrom blows on the other viſcera alſo; diſorders which, as you very well know, begin ſlowly and increaſe gradually: although it ſometimes happens, from the very beginning, that marks of the injury receiv'd diſcover themſelves, and do not fail to continue quite to the end, although in a mild degree; as happen'd to the young man, whom the illuſtrious Haller (*f*) deſcrib'd, that was "kick'd upon the abdomen" by his drunken companions.

16. A boy, of nine years of age, having fallen under a carriage, had the wheel run over his belly, and died in this manner. The pain of his belly, indeed, was not great; yet the pulſe was but juſt perceiv'd: the extremities were very cold: the patient ſcarcely ever lay ſtill, but turn'd himſelf alternately from one ſide to the other, with great anxiety. Finally, an hour or two after the preſſure of the wheel had been ſuffer'd, convulſive motions came on; and he died within a quarter of an hour.

The abdomen, which was very tenſe, being cut into, a quantity of fluid blood was found to be extravaſated into the belly; and the inteſtines were ſeen to be turgid with air. The right part of the liver, where it is turn'd towards the ribs, was deeply lacerated, to the extent of three inches of Bologna.

In the thorax, the lungs were found to be every where unconnected on all ſides, and ſound; except that, on the back-part, they were ſlightly inflam'd. The ventricles of the heart contain'd a fluid and frothy blood.

(*c*) Inter Epiſt. ad Familiar. l. 6. Epiſt. 18.
(*d*) Eph. N. C. Cent. 1, & 2. Obſ. 151.
(*e*) Inſtit. cit. § 718.
(*f*) Opuſc. Pathol. Obſ. 25.

17. In

17. In turning over the Sepulchretum, you will find two obſervations, one of which relates to the wheels of an empty waggon (*g*), and the other to thoſe of a well-loaded chariot (*h*), having paſs'd over the belly. And, indeed, the different weight of the compreſſing body ought to be attended to; and, at the ſame time, the various reſiſtance of the man that is preſs'd upon; whether you conſider his age, or the part of his belly which is compreſs'd: and the firſt of thoſe who are there deſcrib'd, was about thirty years of age; the other ſomewhat more.

The hypogaſtrium of the firſt had been compreſs'd a little above the pubes; and the hypochondrium of the other. In the former, who died within ſix-and-thirty hours; and not without convulſive motions; under the ſkin of the abdomen, and the other integuments thereof, which were ſound, the inteſtine ileum was found to be perforated: a circumſtance that had happen'd the more eaſily, becauſe it was diſtended in conſequence of drunkenneſs. In the other, however, who dragg'd on his life for a conſiderable time, they found the liver to be in an entire ſtate, under the ſpurious ribs, which were alſo entire; and none of thoſe parts that are in the cavity of the belly, was ruptur'd: but only a large abſceſs was found betwixt the muſcles of the abdomen and the peritonæum.

But he was a boy of nine years of age, in whom Valſalva found the liver lacerated; and thoſe three were boys alſo, in ſpeaking of whom above (*i*), from the celebrated Heiſter, I have ſaid that ſome viſcus, and in the third the liver itſelf, was entirely ruptur'd in the middle, from the violence applied to the abdomen externally; although the ſkin itſelf was ſound.

And it was ſtill a boy, who, falling down drunk from the ſhafts of a waggon, was violently preſs'd upon by the axle-tree and hind-wheel of the carriage; ſo that he died ten hours after: and had, beſides, contuſions of the inteſtines, here and there, with livid appearances; the pylorus, the liver, the vena portarum, and the right kidney, entirely ruptur'd, through the middle, to the great ſurprize of Preuſſius (*k*); who wonder'd how it could have happen'd, that he ſhould live ſo many hours after having undergone ſuch a number of injuries, and having had ſo large an extravaſation of blood, with which he found the belly to be full: and he alſo wonder'd that the ſkin was no-where ruptur'd, not even in the abdomen; unleſs we ſhould, perhaps, ſay that it was in conſequence of this being ſoft, and eaſily extended, by reaſon of the ſoft viſcera being ſubjected to it, which would ſuffer the ſkin to yield, and remain unhurt; and that thoſe viſcera were neceſſarily fiſſur'd, becauſe they could not give way, but were forc'd and driven againſt the poſterior parietes of the belly, where it is in great meaſure bony; and theſe parietes with great violence againſt the very hard ground, that lay under them.

And, indeed, the ſame thing ſeems to happen to the natural integuments of the body, ſometimes, that happens to the clothes we wear, which are frequently unhurt by a blow, when the body is wounded beneath. Thus I

(*g*) Additam. ad hanc S. Obſ. 27. cum Schol.
(*h*) L. 3. S. 17. Obſ. 29.
(*i*) N. 15.
(*k*) Eph. N. C. Dec. 3. A. 5, & 6. Obſ. 228.

have heard, from a colleague of undoubted credit, that the abdomen of a pregnant woman, which had been gor'd by the horn of an ox, was ruptur'd in ſuch a manner, notwithſtanding her clothes were neither perforated nor torn, that the uterus could be ſeen; and that a hernia remain'd there after the cure, which was accurately attended to by himſelf. And I myſelf ſaw a wound, in another colleague of mine, who, while he liv'd, was the very worthy abbe of this celebrated monaſtery of St. Juſtin, upon the poſterior part of the left ſincipital bone, which had been lately brought to a cicatrix, and which had been inflicted fifteen days before, accidentally, by the fall of an angular ſtone, of two pounds weight, that had neither cut his cap, nor his cowl, nor his under thin linen-cap, wherewith his head was cover'd, nor made any perforation in them; but had wounded the natural integuments of his head, that lay beneath, in ſuch a manner, that a great quantity of blood was immediately diſcharg'd.

And theſe things are ſaid of blows or compreſſions of the belly. But whether to one or the other of theſe cauſes, or to both of them, or even to a very violent concuſſion, is to be attributed what you will ſee related in the next hiſtory, you yourſelf will judge. It was not only related to me by Valſalva, but left in his papers alſo.

18. A builder, about ſix-and-thirty years of age, falling from a high building into the dirt, remain'd in a ſtate of ſtupor. No external injury appear'd. The abdomen ſwell'd a little after, and became tenſe. The pulſe was ſo ſmall as ſcarcely to be perceivable. He died within twelve hours.

On opening the belly, the cauſe of this part becoming tumid was found to be extravaſated blood. In ſome of the membranes of that cavity, a blackneſs from contuſion appear'd. Yet from the rupture of what veſſel the blood had been diſcharg'd, it was difficult to find out. It might, however, be ſuppos'd to have proceeded from a branch of the vena cava, becauſe this vein was entirely depleted.

19. And, indeed, in another man, who had fallen from on high, Jacobus Sylvius ſaw, formerly, a great quantity of blood pour'd out from the ruptur'd vena cava into the cavity of the belly; as you alſo have it in the Sepulchretum (*l*). And what was found by Valſalva in the belly of a virgin, who had fallen from a conſiderable height, I have already told you (*m*). Now let us ſee what deſcriptions he has left relative to blows upon the loins, and that neighbourhood.

20. A man, very near forty years of age, was wounded with two muſquet-balls, in this manner: The balls enter'd at the right ſide of the ſecond and third vertebræ lumborum, opening only one foramen for themſelves; and they went out at a double foramen, the one being pretty large, the other but ſmall, from the middle of the abdomen, about two fingers breadths above the navel. The wounded man went to a place which was not far diſtant, where remedies were applied by a ſurgeon. He, from that time, complain'd of violent pain: he was oblig'd to breathe with his neck erect, and not without conſiderable difficulty and ſhortneſs: he more than once vomited: his

(*l*) Sect. hac 3. Obſ. 28. § 6. (*m*) Epiſt. 40. n. 9.

urine

urine he endeavour'd to diſcharge, but in vain: his pulſe became gradually ſmall and weak: at length, continuing to ſpeak, and having his ſenſes in a very perfect ſtate, and having taken in the air ſometimes with a gaping mouth, which is the certain forerunner of death, he died on the ninth hour after receiving the wound.

The whole back of the carcaſe began to be livid ſome hours after death. The day following, in the morning, not only the lividneſs had increas'd, but, moreover, the whole head was become disfigur'd, and the right eye had ſwollen to a very great degree. The lips of the wound inclin'd to putrefaction on both ſides.

In the belly an extravaſated blood was ſtagnant. The inteſtinum ileum was perfectly lacerated in three places; and the colon, in that part which is connected to the ſtomach, was wounded in one half of its breadth: and all the inteſtines were red.

As the wound enter'd the cavity of the belly a little below the right emulgent vein, near to the ſeat of the ureter, it was doubted whether this part was not lacerated. But as the intolerable ſtench of the carcaſe oblig'd us to haſten to a concluſion, the matter could not be ſufficiently examin'd. It was alſo doubted, whether the muſquet-balls had not been infected with poiſon.

21. You might here, among other things, enquire how it could happen, that, as there were only two balls, they had lacerated the inteſtine ileum in three places? if you did not take notice, that the convolutions of this inteſtine are of ſuch a nature, that, one part of it being plac'd before the other, the inteſtine was twice met with in the paſſage which one of the balls had taken.

22. A man, of forty years of age, was wounded, by the diſcharge of unequal fragments of lead from a muſquet, in ſuch a manner, and in ſuch a ſituation of body, that in the left buttock, where theſe fragments had enter'd, were three foramina; and in the lumbar region, where they had paſs'd out, near the lower rib, were ſeen two foramina. About the fifth day came on a ſuppreſſion of urine; and the patient complain'd, more than once, of a ſpaſmodic pain at the upper margin of the os ileum, to ſuch a degree that the whole body was ſuddenly ſhaken: and the part could ſcarcely ſuffer the touch of the ſurgeon's hand externally, by reaſon of the violence of the pain. The pain was increas'd every day; and the convulſion, in conſequence, became more violent and continual; eſpecially about the throat and the mouth. Yet he retain'd his ſenſes, nevertheleſs. At length, he died on the thirteenth day.

The wound being examin'd by diſſection, it was very evident that no leaden fragment had penetrated to the internal parts. Yet one of them had paſs'd a different way from the others, and had broken into pieces the upper margin of the os ilium, where the tendons of the muſcles are connected. However, there was no mark of injury in the belly, if you except a kind of blackneſs of the inteſtines, and ſtill more of the omentum, as if from contuſion.

But the cerebrum was perfectly ſound; ſo as not to ſhew the leaſt traces of any ſerum.

23. This, I iuppoſe, was that other man whom I have obſerv'd above (*n*) to have been ſeen by Valſalva, and to have died from a comminution of the margin of the os ilium, when I had deſcrib'd one that was carried off by a wound of the ſame kind; but by little pieces of lead, which were not diſcharg'd on the poſterior part in this manner. And near to that, which I juſt now copied, comes the obſervation of Harderus, with which I could wiſh to have a diſſection join'd.

It is extant in the Sepulchretum (*o*), and ſpeaks of a man being wounded with a muſquet-ball "behind the nates;" the ball proceeding towards the ſuperior parts, betwixt the muſcles and tendons which belong to the back: and you will ſee, that, from this wound, at length, a ſtrangury firſt aroſe, and ſoon after a convulſion about the throat and mouth; which, being at length propagated to the limbs, and afterwards to the whole body, ſoon carried off the patient.

24. After wounds follow blows receiv'd upon the loins, and the ſpine that lies betwixt them. In regard to which blows take the two following obſervations of Valſalva.

25. A man, of fifty years of age, happening to be walking in a very ſtooping poſture, was ſtruck, by a piece of wood that fell from a conſiderable height, in a very violent manner, on the three inferior vertebræ of the loins. He fell down half-dead; and, being brought into the hoſpital of St. Mary de Vita, died four hours after receiving the blow.

The loins, and, in particular, the common origins of the muſcles call'd *longiſſimi dorſi*, and *ſacro-lumbi*, were found to be ſtuff'd up with coagulated blood, from the contuſion. Within the vertebræ, where the blow had been applied, was a ſmall quantity of grumous blood; yet the included marrow was not at all injur'd, to appearance. The viſcera were likewiſe unhurt. In the arteries alone; which in dead bodies are, for the moſt part, wont to contain little blood, ſo great a quantity of this fluid was found, and in a coagulated ſtate, that they were entirely fill'd therewith; eſpecially about the præcordia, where it had coagulated in a much greater degree.

26. Another man, of ſix-and-forty years of age, was ſtruck on the back by a piece of falling wood. From thence the power of moving was entirely loſt in the legs; though the power of feeling remain'd. The inteſtinal excrements were diſcharg'd involuntarily; the urine, by the help of the catheter alone; and this fluid, about the end of the diſeaſe, loſt its natural colour, and reſembl'd water in which freſh meat had been waſh'd. In the part of the loins which had been ſtruck, was ſcarcely any pain perceiv'd. But in this manner he gradually ſunk, and was carried off on the fourteenth day.

The limbs of the carcaſe were lax externally, and eaſily moveable. The belly being open'd, the inteſtines were found to be ting'd, in many places, with a conſiderable blackneſs; where they were turn'd towards the parts that had been hurt. For the ſame blackneſs likewiſe was extended through the whole iliac and lumbar region; ſo that the blood appear'd, in ſome meaſure,

(*n*) N. 5. (*o*) In Additam. ad S. hanc 3. Obſ. 32.

to

to be coagulated in the interſtices of thoſe parts. The ſpleen was alſo livid, to a very extraordinary degree, in one half of it. Finally, the lumbar vertebra, as the ſymptoms of the diſeaſe had previouſly ſhown, was found to be broken; ſome bony fragment being conſpicuous from thence.

In the thorax, the lungs were diſtinguiſh'd with certain black ſpots; yet on the back part: and both lobes, but eſpecially the left, and in the inferior part, were ſomewhat inflam'd. Both ventricles of the heart contain'd a polypous concretion; but the right the largeſt: for this enter'd into the pulmonary artery. However the blood was fluid in almoſt every part.

27. If you compare theſe two hiſtories one with another, you will, without doubt, be ſurpriz'd that he, whoſe vertebræ are not ſaid to have been broken, ſhould have died within four hours; and that the other, who is ſaid to have one of his vertebræ, at leaſt, broken, ſhould not die till the fourteenth day. Was it becauſe this vertebra was not only one, but perhaps the loweſt of all; and becauſe the others were three in number? But thoſe three alſo were the lower vertebræ: and you know that the body of the medulla ſpinalis itſelf does not reach down to the third vertebra lumborum: and it does not ſeem that ſo great a difference can be accounted for, from ſomewhat more, in number, of the nerves which compoſe the cauda equina, as it is call'd, receiving a concuſſion; as none of theſe, certainly, go to the parts above.

And I ſhall ſay the ſame, if you ſhould chooſe to aſcribe that difference to this circumſtance; that within thoſe three vertebræ there was ſome extravaſated blood, no mention of which is made within this one. I confeſs, indeed, that the different conſequences which attend an injury of the vertebræ, or of the ſpinal marrow itſelf, at different times, do not, frequently, ſeem to be capable of being eaſily explain'd.

I omit thoſe obſervations, that you have in the Sepulchretum, of Rumlerus (*p*), and Fontanus (*q*), on a fall from a high place. For, although the former deſcribes ſimilar ſymptoms with, and even more conſiderable than, the ſecond obſervation of Valſalva, and death on the ſeventh day; yet it does not appear what, and how many, vertebræ were injur'd; and to how great a degree they were injur'd: and the obſervation of Fontanus, as it tells us of five vertebræ dorſi being luxated, and does not only not take notice of ſymptoms of this kind, but ſhows that the life of the patient was prolong'd to a very conſiderable time; is liable to the doubts of thoſe who do not acknowledge luxations of the vertebræ, as I ſhall ſhow hereafter (*r*). Read over again, therefore, the hiſtory of Meekrenius in the ſame place (*s*); in which the muſquet-bullet, paſſing betwixt two vertebræ of the loins, broke theſe vertebræ, and compreſs'd the ſpinal marrow; yet did not bring on thoſe ſymptoms that I have mention'd, nor death till after twelve weeks: nay, as you have it in the author's own words, not even till after the fourteenth week.

And leſt you ſhould ſay, with Hornius (*t*), that the bullet had ſtopp'd at the

(*p*) Sect. hac 3. Obſ. 29. § 7.
(*q*) Ibid. Obſ. 28. § 1.
(*r*) Epiſt. 56. n. 33.
(*s*) in Additam. Obſ. 4. cum Schol.
(*t*) in Schol. modo cit.

external

external integument of the ſpinal marrow, ſo that it could not compreſs it; add to this the obſervation of Bohn (*u*), who not only ſaw the ſpine, in the loins, perforated with a bullet in a military officer, but alſo "the left half "of the funis medullaris perforated at the ſame time; yet in ſuch a man-"ner, that not even the right half remain'd quite untouch'd:" violent ſymptoms being the conſequence thereof, and life, nevertheleſs, being carried on to the eighth or ninth day.

But leſt you ſhould ſay, after all this, that the bullet which enter'd betwixt the ſecond and third lumbar vertebræ (and much leſs that which enter'd between the third and fourth, as in the hiſtory of Meekrenius) could not have wounded the body of the medulla itſelf, but only the cauda equina; ſet both theſe hiſtories aſide; and rather read the obſervation of Platerus, which is extant in another part of the Sepulchretum (*x*).

In this obſervation we have the caſe of a virgin, in whom a leaden bullet, diſcharg'd from a muſquet, having ruptur'd the ſpinal marrow, within the eighth or ninth vertebra dorſi, had immediately taken away, from the middle of the body downwards, the power of moving and feeling; and life was, nevertheleſs, prolong'd to the twentieth day. Nay, conſider duly what Cuvilliers relates, in the Hiſtory of the Royal Academy of Sciences (*y*), of a ſoldier, in whom the point of a ſword, to the length of two inches, had paſs'd through the twelfth vertebra of the back, and the included body of the marrow; and not only paſs'd through, but adher'd there always, and excited the moſt ſevere pains indeed, but brought on no paralyſis, as long as the patient liv'd: and he liv'd ſome months.

Now compare with theſe obſervations, that which you have in the Sepulchretum (*z*), of Marcellus Lucius. You will read of a man's dying within about thirty hours, in whom a muſquet-ball, having enter'd on the right ſide, four inches below the region of the kidneys, paſs'd through the middle of the ſpinal marrow, and came out at the left ſide. Certainly this bullet had not paſs'd through the body of the marrow, but the cauda equina.

How could it happen, then, that death was ſo much the ſooner brought on, than in thoſe, in whom the body of the marrow itſelf had been paſs'd through; and yet, at the ſame time, ſo much later than in that firſt man of Valſalva's, in whom this very cauda equina had not only not been paſs'd through, but ſeem'd to be quite free from injury? Without doubt it is difficult, as I have ſaid, to explain theſe differences.

Yet if there be any room for conjectures, which, perhaps, are not entirely to be diſapprov'd; there may ſeem to have been two cauſes, why this man of Valſalva's was ſnatch'd away by ſo ſudden a death. For as he walk'd in a prone poſture, when the piece of wood, falling down from on high, ſtruck thoſe three vertebræ; I ſhould ſuppoſe that they receiv'd the more violent concuſſion, in conſequence of the ſtroke being receiv'd leſs obliquely; the ſanguiferous veſſels being, by that means, ruptur'd, and diſcharging more blood than perhaps appear'd in that part, as in a falling and ſupine man, it might have flow'd into other vertebræ, about the body of the medulla:

(*u*) De Renunc. Vuln. S. 1. prope fin.
(*x*) l. 1. S. 15. Obſ. 26.
(*y*) ad A. 1743. in Obſ. Anat. 11.
(*z*) Sect. hac 3. Obſ. 26. § 2.

nearly

nearly in the ſame manner as is ſuppos'd to have happen'd, by du Verney (*a*), in certain kinds of apoplexies, as it were, after he had, in one of them, ſeen blood flow down, not from the cranium, but from the tube of the vertebræ.

For that part being compreſs'd, "from whence the great number of nerves, "which give origin to the branches of the intercoſtal nerve, ariſe," he thought "that the motion of the internal parts ceas'd." And I ſhould ſuppoſe that it ceas'd ſo much the more eaſily, in our caſe, in proportion as the blood (which is another cauſe of my conjecture) reſiſted, by its thickneſs, the influence of the organs which propell'd it; or by that leſs than proper fluidity, from which it was found to be ſo concreted in the arteries, and ſtill more about the præcordia.

28. To the blows of the limbs, at length, belongs the following obſervation of Valſalva: which not only ſhows how much regard ought to be paid to injuries of the extremities, but, at the ſame time, confirms this opinion, that, from a convulſion of the jaws, in caſes of wounds, fatal convulſions of the whole body are ſhown to be at hand.

29. A man, of five-and-thirty years of age, was ſtruck, with a very large ſtone, upon the extremity of his left foot. The contus'd part had no pain in it, unleſs in conſequence of being touch'd. But from the middle, in particular, of the great toe, where the violent pain was excited by touching, it emitted no purulent matter, nor did by any means ſeparate the lacerated fibres of the tendons. The man was in every reſpect well, and confeſs'd it, and went about his uſual employments with alacrity. On the ſixth day, however, he was ſuddenly ſeiz'd with tenſion and pains, and with a dreadful convulſion about the fauces. After this follow'd a very great convulſive motion in the whole body: and that was follow'd by death on the eighth day.

In diſſecting the head, nothing preternatural was found, if you except a little ſerous matter ſtagnating in the ventricles of the brain.

30. Now let us ſubjoin ſome obſervations of our own, of wounds, or of blows, in the ſame parts that are hitherto ſpoken of; preſerving the ſame order as before.

31. A man being afflicted with vomitings, and having a low and weak pulſe, in conſequence of a wound being inflicted upon the hypogaſtrium, at the right ſide of the linea alba, together with ſome convulſive motions, but no ſwooning; he died within the third day, in this hoſpital, before the latter end of November, in the year 1742.

The abdomen, which was not tumid, being laid open, we found a quantity of extravaſated blood in a coagulated ſtate: and the inteſtine ileum was pierc'd through, where it correſponded to the wound.

32. Although the prudent and cautious phyſician, in forming a judgment of the fatality of wounds inflicted even upon the ſmall inteſtines, ought not to neglect thoſe things which Abraham Vater (*b*) has learnedly and prudently written upon this ſubject; yet we, for the moſt part, experienc'd that to be too true, which, after Hippocrates (*c*), has been ſaid by Celſus (*d*), "that

(*a*) apud du Hamel Hiſt. R. Sc. Acad. l. 3. S. 5. c. 2. n. 1.
(*b*) Diſp. inſcr. Vuln. in Inteſt. Lethalitas.
(*c*) S. 6. Aph. 18.
(*d*) De Medic. l. 5. c. 26. S. 2.

" he cannot be ſav'd, in whom the jejunum, or any ſmall inteſtine, has been " wounded." To which our Fabricius ab Aquapendente (*e*), has added the following things: " I have obſerv'd perſons, thus wounded, to have a very " ſmall, and very frequent pulſe, and to die on the firſt or ſecond day; " from whence, if you ſee ſuch pulſes, always have a ſuſpicion of the ſmall " inteſtines being wounded."

As far as it has happen'd to me to obſerve, in a certain man, in whom a wound, inflicted upon the umbilical region, ſhow'd the inteſtine jejunum to have been wounded in its ſituation; Fabricius has ſpoken with propriety of the pulſes, and juſtly, alſo, of the day on which death comes on: although, as I was not allow'd to diſſect the body, I could not, for a certainty, determine, whether this was to be aſcrib'd to the wound of that inteſtine alone, or to the wound of the meſentery, and the veſſels alſo; from whence blood had been diſcharg'd.

Without doubt we muſt be led by our diſſections. And as theſe ſhow us, for a certainty, what inteſtines were wounded, ſo they make us conceive, that the term of life is different in different perſons, and that very frequently, from this cauſe; that is to ſay, according to the various diſpoſition of bodies, and the different ſymptoms which are join'd to theſe diſeaſes. If, in this third ſection of the Sepulchretum, you read the twenty-fifth obſervation, which contains moſt of the examples that relate hereto; you will ſee, that wounds of the inteſtinum ileum have brought on death, ſometimes within two-and-twenty days (*f*), ſometimes within three days (*g*), and at other times within four (*h*): but that wounds of the colon became fatal within as many days (*i*); at one time, and at another within as many hours (*k*): and even that, in a certain perſon, the inteſtines, both large and ſmall, being pierc'd with many wounds, theſe wounds had become fatal on the fifth day (*l*).

Add to theſe from Hoyerus (*m*); that a wound of the inteſtine duodenum became fatal on the fourth day; from Bohn (*n*), that a wound of the jejunum was follow'd by death a few hours after; from the ſame author (*o*), from Uzenbezius (*p*), and from Haller (*q*), that a wound of the ileum was fatal on the eighth day, the fourth day, and the firſt. To me, however, it had happen'd long before, not to obſerve a different time of death from that in the man in queſtion, in conſequence of a wound in the ſame inteſtine, as you will learn from the following hiſtory.

33. Another man died convuls'd, in the ſame hoſpital, on the day after his having receiv'd a wound, with a knife, about the lower part of the right epicolic region, a little before the end of December, in the year 1726.

As I examin'd, with great accuracy, ſome parts of this body, and particularly the kidnies, one of which was furniſh'd with two ureters, that ran diſtinctly from each other, and were divided, even at their termination, with-

(*e*) Pentateuch. l. 2. c. 34. in fin.
(*f*) § 9.
(*g*) § 15.
(*h*) § 14.
(*i*) § 13.
(*k*) § 6.
(*l*) § 12.
(*m*) Act. N. C. Tom. 3. Obſ. 18.
(*n*) De Renunc. Vuln. S. 2. c. 4.
(*o*) Ibid.
(*p*) Eph. N. C. Cent. 7. Obſ. 60.
(*q*) Diſp. Anat. collectar. Tom. 7. in fin.

in

in the bladder; I did not neglect to obſerve thoſe things which related to the wound. The meſentery was pierc'd through, not far from the termination of the inteſtinum ileum, but without having any veſſel injur'd, in ſuch a manner as to be capable of pouring out a great quantity of blood: nor indeed was there any effuſion which deſerv'd attention. And even that inteſtine was wounded.

34. This wound of the inteſtine prevented me from being ſo capable of confirming the obſervations of Frederic Ruyſch; though, in this man, there was no effuſion of blood to render me doubtful. This author having admoniſh'd us, in his *Theſauri anatomici* (*r*), "that throughout the meſentery "are a pretty conſiderable number of viſible nerves, the injuries of which "produce very violent ſymptoms, and very great pains;" aſſerted, in his *Adverſaria* (*s*), that he had often ſeen men die within two or three days, after continual and intolerable pains of the belly; in none of whom he could find any part of moment injur'd by the wound, beſides the meſentery itſelf, after the moſt accurate examination was made: notwithſtanding the authors, who had written upon theſe things to that time, had not pronounc'd the wounds of the meſentery to be fatal. Somewhat nearer to the obſervations of Ruyſch, comes that which was related to me by a ſurgeon of undoubted veracity, about the beginning of the year 1724, in the following manner; and that a few days after it had been made by himſelf.

35. A foreigner who had reſided here for a long time, and was therefore known to every one, receiv'd a wound with a ſharp, thin, and two-edg'd ſword, which penetrated the abdomen obliquely, on the left ſide, under the ribs themſelves. The narrowneſs and obliquity of the wound were ſuch, that not only nothing could come out of the wound; but they would not even ſuffer the probe, by any diligence of his ſurgeon, or by the diligence of Maſſieri himſelf, to be introduc'd into the cavity of the belly: and yet that the wound had reach'd into this cavity, was plain from the following ſymptoms.

From the time of receiving the wound, quite to the fifth day; on which the pulſe fail'd, and the patient died; he threw up the ingeſta and bile, continually, by vomiting; if you except an interval of five hours, which happen'd no more than once. He was tortur'd with pains of the belly. The inteſtines never diſcharg'd any thing, unleſs ſtimulated by glyſters. And although blood had been taken away at three ſeveral times, and although none of this fluid ever appear'd in what was diſcharg'd after glyſters, or by vomiting; yet, laſt of all, blood iſſued from the mouth before death, and at the ſame time from the noſtrils.

On opening the abdomen, under the inteſtines, which were turgid with air, a ſmall quantity of blood was ſeen to be extravaſated; and that in the lower part of the belly. And the wound had reach'd to the inteſtine colon, about four inches below the ſpleen; but had injur'd it only ſuperficially; and from thence, without injuring any other inteſtine, it had reach'd to the meſentery: which, for this reaſon, was not only found to be wounded, but tumid.

(*r*) I. Repoſ. 3. n. 13. not. 1. (*s*) Dec. 2. c. 4.

36. Although, beſides the meſentery, the external ſurface of the inteſtine was here wounded alſo; yet you will eaſily perceive, that this was much more ſimilar to the obſervations of Ruyſch, except that life was ſomewhat more prolong'd, when you obſerve with Boerhaave (*t*), "that the external ſurface of the inteſtines is, in fact, nothing but the meſentery itſelf."

However, when death happens from a wound in the meſentery, and you cannot account for this circumſtance from the inciſion of any of its pretty large veſſels, as in the citizen whom Bohn (*u*) diſſected; you may aſcribe it, with Ruyſch, to the puncture of theſe nerves, but of thoſe that are pretty large: for if the puncture of the very ſmall ones were fatal likewiſe; there would, in my opinion, be no inſtance of a ſucceſsful cure of a wound that pierc'd through the belly: or, at leaſt, none that was ſoon brought about, and unattended with the moſt violent ſymptoms; yet this has been ſaid by us, as I have ſaid above (*x*); and others alſo have ſeen it: among whom is Waldſchmied (*y*).

But our caſe was a wound with a ſword: Mauchartus (*z*), however, having ſeen the belly pierc'd through by a leaden bullet; in conſequence of which, the wounded man died nearly within the ſpace of five hours; enquir'd into the cauſe of ſo ſpeedy a death, and found, that the bullet, after having gone through the fundus of the ſtomach, "had paſs'd, from thence, "through the meſentery, betwixt the colon and ileum, without injuring "either of them, or without rupturing the meſenteric veſſels:" and he obſerv'd, that it was "very little of the contents of the ſtomach, which had "gone down into the abdomen; and that there were, in no part whatever, "marks even of an incipient gangrene, or any fatal hæmorrhage:" ſo that he might have attributed this ſo ſpeedy death, to the larger nerves of the meſentery being lacerated, if he had not been inform'd, "that no convul-"ſions had come on, previouſly to death; but that the vomitings had been "frequent." Although the internal convulſions of the viſcera, perhaps, eſcap'd the notice of the by-ſtanders.

Certainly, although you have ſeen it confirm'd, by obſervations produc'd above (*a*), by me, and particularly by obſervations referr'd to, in other authors, that wounds inflicted on the fundus of the ſtomach, are fatal within a ſhort time, for the moſt part; yet, that this had kill'd, within ſo very ſmall a ſpace, a man who was ſo healthy and robuſt, neither Mauchartus appears to have believ'd, nor do I imagine others will readily believe. But let us return to what I myſelf have ſeen.

37. A miller's ſervant, of one-and-twenty years of age, healthy, robuſt, and of a very good habit of body, had the ſame thing happen to him, which happens frequently to young men that are audacious, and full of threats, of which kind he was; I mean, that he receiv'd a wound which prov'd fatal. This was inflicted upon the left epicolic region, with a butcher's knife: as it was then the firſt watch of the night, he return'd home by himſelf. In the morning, being brought into the hoſpital, he was taken

(*t*) Prælect. ad Inſtit. § 816.
(*u*) De Renunc. Vuln. S. 2. c. 4.
(*x*) n. 7.
(*y*) Eph. N. C. Cent. 9. Obſ. 70.
(*z*) Earund. Cent. 5. Obſ. 33.
(*a*) n. 9.

under

under the care of a phyſician and ſurgeon. On that day the fever was inconſiderable. But on the following night he vomited, and always trembled with convulſive ſtartings. And continuing to tremble and ſtart in this manner, he died on the following day, in the morning; about the fortieth hour, after receiving the wound.

The body was made uſe of on the next day, which was the twenty-firſt, of January, in the year 1738, and on many of the following days, to carry on the anatomical demonſtrations, which we had begun to give in the college.

The tranſverſe and oblique muſcles of the abdomen, were perforated, in that region which I have mark'd out, with a wound that would admit almoſt two fingers: and betwixt them the air had enter'd, ſo that a beginning emphyſema was already, in a manner, brought on. This air had got out of the colon; which was wounded, as I ſhall ſay juſt now; into the cavity of the belly, and had diſtended it. Nor had the air alone come forth from that inteſtine, but the excrements alſo: ſo that, although a fluid was extravaſated in the belly, to the quantity of two pounds; the greateſt part of it was made up of excrementitious matter, and very little of it of blood; no conſiderable veſſel having been injur'd.

For the knife, having pierc'd through the abdomen, as I have ſaid, had paſs'd on obliquely upwards, and inwards: and firſt, indeed, had incis'd the correſponding part of that inteſtine, which I have mention'd, in ſuch a manner, that the anterior and poſterior ſurface of it, and that which is turn'd towards the vertebræ laterally, being cut aſunder, gave a paſſage for the air and excrements to be diſcharg'd into the belly.

After that, the knife had, without hurting the kidney, or the appendix of the diaphragm, paſs'd through the *muſculus quadratus lumborum*, and had penetrated, beyond this, into the common beginning of the *ſacrolumbus* and *longiſſimus dorſi*, in ſuch a manner, that of the tendons, which aſcend obliquely from this beginning, to the tranſverſe proceſſes of the lumbar vertebræ, one only was incis'd; and that not entirely; but what you know to be much worſe, was cut into only in part. From hence, therefore, perhaps moſt perſons would have deduc'd the principal cauſe of the man's being carried off by convulſive ſtartings; eſpecially, as the wounded inteſtine was not red, or livid, in that very part where it was wounded.

The fundus of the ſtomach, when inſpected on the internal ſurface, ſhow'd the ſmall veſſels to be diſtended with blood here and there, for ſome ſpace. However, the liver was large, and very long tranſverſly; ſo as to be extended almoſt into the whole hypochondrium on the left ſide. The ſpleen was alſo pretty long, and bigger than it naturally is; and the artery thereof, was not only very ſmall, in proportion to the magnitude of that viſcus in particular, but very little tortuous alſo. For I was leſs ſurpris'd at the thinneſs, as I obſerv'd the trunk of the great artery to be, in that part, as well as in the thorax, very narrow; and not only in proportion to the body, but alſo in proportion to the vena cava itſelf; the foramen of which, in the ſeptum tranſverſum, was the largeſt of all that I ever remember to have ſeen.

Upon opening the thorax, I found the lungs every where free and unconnected;

connected; which, you know, happens but rarely in adult perſons: but they were furniſh'd with bronchial glands, of a larger ſize than uſual, ſo that one was almoſt equal in magnitude to a ſmall nut, when compreſs'd. In the pericardium was a yellowiſh water, and that not in very ſmall quantity. The heart was rather large, and therein was blood, which, like the blood in other parts, was black; but there it was, alſo, in ſome meaſure grumous. The great artery, beyond the curvature, ſhew'd ſome kind of furrows, as it were, drawn on the internal ſurface, and in a longitudinal direction.

The other circumſtances that I have obſerv'd in this body, do not relate to the preſent ſubject.

38. Although you have had a great number of obſervations, in this letter, in regard to wounds of the ſtomach, the inteſtines, and moſt of the other viſcera which are in the belly, from Valſalva, from me, and from other obſervators; yet I will refer to others, in ſeveral authors, which you may, if you pleaſe, inſert into the Sepulchretum.

To wounds of the larger inteſtines, that is, of the colon and the rectum, relate the obſervations of Harderus (*b*), and Bautzmannus (*c*). In the latter is, at the ſame time, what relates to the diaphragm being wounded; and in the former, what relates to the receptaculum chyli; if I rightly underſtand it; but, at leaſt, what relates to the kidney being wounded at the ſame time: mention of a wound in which part is alſo made in the preceding letter (*d*). Now we ſhall add the obſervation of Laubius (*e*), which is ſo much the more worthy of attention, becauſe the knife had reach'd through the middle of the ſpleen quite to the left kidney. And there will be another of the ſpleen from Bernerus (*f*).

Moreover, beſides thoſe examples which are pointed out in the latter end of the preceding letter (*g*), as relating to wounds of the liver, Bohn (*h*) will give you others, which have ſtill more reference to the ſubject of this letter. And in none of the viſcera of the belly are deep wounds more certainly, and more ſpeedily fatal, than in this viſcus; not only by reaſon of the multiplicity of its veſſels, but alſo by reaſon of its greater thickneſs, the nearer it approaches to the diaphragm.

Wherefore Homer (*i*) has, with great propriety, ſaid of Eurypilus throwing his lance: *Pervaſit hepar ſubter præcordia: ſtatim autem genua ſolvit:* and in another place (*k*) of Patroclus: *Percuſſit ubi mentes fingunt circa prudens cor; cecidit autem:* in which paſſage, by reaſon of the word *fingunt*, there is ſome reſemblance to a commentary which we have in the book *De Morbo Sacro* (*l*).

And leſt you ſhould here think that I digreſs to the poet, contrary to the cuſtom of the ancients; ſee what Galen (*n*) has obſerv'd in regard to that paſſage of Homer (*m*), which relates to Ulyſſes and the Cyclops, *Ubi mentes hepar habent.* "So ſpeedy and violent a death," ſays he, "follows the "wound or the laceration of this vein," that is to ſay, the cava, where it

(*b*) Eph. N. C. Dec. 3. A. 9, & 10. Obſ. 62.
(*c*) Ibid. Obſ. 234.
(*d*) N. 40.
(*e*) Eph. N. C. Cent. 10. Obſ. 8.
(*f*) Act. N. C. Tom. 2. Obſ. 69.
(*g*) N. 41.
(*h*) C. 4. ſupra ad n. 36. cit.
(*i*) Iliad. l. 11.
(*k*) Iliad. l. 16.
(*l*) N. 18.
(*m*) Odyſſ. l. 9.
(*n*) De Uſu Part. l. 4. c. 14.

connects

connects the liver, into the ſubſtance of which it is fix'd, to the diaphragm, " that when the poet ſays, the very wiſe and prudent Ulyſſes lay in wait for " the huge Cyclops, and contriv'd how to take away his life, he determin'd " not to force his ſword into any other part of the body, but that where the " liver is contain'd in the diaphragm: ſo confident was he, in reſpect to " this place, that if it was affected with a wound, it would not ſuffer him to " live even a moment of time."

But Riolanus (*o*) alſo commends Galen, for producing this teſtimony of Homer: although, through forgetfulneſs, he aſſerts that Ulyſſes really did what both of them ſay he intended to do.

And whether from a wound of the gall-bladder, an equally ſpeedy and ſudden death is to be expected, has been ſufficiently ſhewn by me in the ſecond of the *Epiſtolæ Anatomicæ* (*p*); as I have conſider'd all the examples, which had been produc'd quite to that time, of rupture in this part, and not only from a wound, but from any cauſe whatſoever. I remember to have read only one or two that have been added ſince that time; one of which you may examine in the works of the very illuſtrious Van Swieten (*q*).

You will ſee, indeed, what ſymptoms, which were very conſiderable, ſucceeded to the wound of the veſicle, and the effuſion of the bile into the cavity of the belly, both immediately and after ſome days; but you will, at the ſame time, ſee that death did not come on before the beginning of the ſeventh day. Yet this did not happen by any means in the other example, which the celebrated Tacconus (*r*) has produc'd; but the woman, in whom was an abſceſs of the liver, which was grown into one ſubſtance with the peritonæum, and had ruptur'd the cyſt, recover'd perfectly.

And, indeed, I ſee that Kaltſchmidt (*s*) agrees with Bohn (*t*) in this opinion, that life may be extended for ſome length of time without the cyſtic bile: nay, he even thinks that this bile, when effus'd within the abdomen, does not, of itſelf, bring on any immediate danger.

On the other hand, there is not the leaſt room for doubt, but, if the other bladder, that is, the urinary reſervoir, be ſo wounded as to diſcharge its contents within the cavity of the belly, that the moſt violent and fatal injuries are the conſequence thereof; as is likewiſe the caſe, when the ureters are wounded. For the urine does not always entirely come out by the external wound, where the bladder is open'd, till it begins to be excreted by the urethra (which it could not be at all in the beginning); as happen'd in the caſes obſerv'd by Ruyſch (*u*), by Bohn (*x*), and by Martinus (*y*).

Sometimes, indeed, the wound is not inflicted in an oppoſite direction, but on the back-part of the bladder; as in the third hiſtory which is produc'd by Bohn (*z*), in which the ſide of the bladder was perforated; and, in like manner, as in that ſervant-maid, of whom Alexander Camerarius (*a*) ſpeaks,

(*o*) Anthropogr. l. 1. c. 2.
(*p*) N. 96.
(*q*) Comm. in Boerh. Aph. § 312.
(*r*) De raris quibuſd. Hepat. &c. Obſerv. n. 3.
(*s*) C. 4. cit.
(*t*) Diſſert. de Vuln. Hepat. § 48.
(*u*) Cent. Obſ. Anat. Chir. 75.
(*x*) C. 4. cit.
(*y*) Commerc. Litt. A. 1731. Spec. 41.
(*z*) C. 4. cit.
(*a*) Act. N. C. Tom. 1. Obſ. 160. verſ. fin.

in

in whom a leaden bullet had paſs'd through the middle ſubſtance of the uterus, and from thence alſo through the middle of the bladder.

We, therefore, come at length to the uterus, other examples of which being wounded you will meet with, beſides this inſtance; particularly in gravid women, in whom, in proportion as it lies more eaſily open to wounds, ſo the wounds are attended with more danger. There is, among the chirurgical diſputations collected by Haller, one in particular, I mean the hundred-and-thirty-firſt, in which (*b*) you will find ſome obſervations relating to this ſubject.

But whatever viſcus is wounded, although each has its peculiar marks to judge by, and in particular that which anatomy ſupplies us with; I mean, the knowledge of its proper ſeat; we muſt, nevertheleſs, be cautious, leſt we are at any time deceiv'd by this very circumſtance, being unmindful of the varieties which frequently occur; as in caſe of the uterus being inclin'd to one ſide; or in caſe of the inteſtine colon, in particular, being inflected from that tranſverſe ſituation, which it is wont to have in the upper part of the belly, more or leſs downwards: or in the liver, of which, if I have not told you in theſe letters what I have ſeen differently in different perſons, yet I have in the firſt of the *Epiſtolæ Anatomicæ* (*c*); as alſo in the ſecond of the Adverſaria (*d*), where I have not conceal'd what it behoves us likewiſe to ſuſpect, in ſome perſons, in regard to the ſtomach.

But ſuppoſe that the ſeveral viſcera ſhould always keep the ſame ſituations; as the diaphragm is higher at the time of exſpiration, and lower at the time of inſpiration, does not the liver, in particular, and the ſtomach, follow the ſituation of the diaphragm, and therefore deſcend more when we inſpire very ſtrongly? When we ſtand upright, when, from faſting, the viſcera which ſupport the liver are empty, the fulchrum of the diaphragm is alſo wanting, which reſiſts its deſcent; as I have ſaid to you already in a former letter (*e*), in reſpect to the opinion of more than one, both of the ancient and modern authors: to whom you may moreover add thoſe celebrated men Winſlow (*f*), and Van Swieten (*g*), who do not doubt but this is confirm'd by the obſervation of the celebrated Garengeot on the liver of a man, which was wounded while in this ſtate.

All theſe things, therefore, and others of the like kind, it is neceſſary to attend to: and if there be any doubt remaining after that; with the knowledge of the more general ſituation, join other tokens taken from the action and the office of each viſcus, and from the nature of thoſe fluids which they contain.

In the ſame manner, the blood-veſſels diſcover themſelves, when wounded, by their blood being in great quantity, if they are large, and there is no obſtacle to its profuſion from the cavity of the belly; and by its being in very great quantity, if the veſſel is very large; as, for inſtance, if the aorta or vena cava be wounded: although, in ſuch a caſe, life ceaſes before we can have time to diſtinguiſh.

(*b*) C. 1. § 15.
(*c*) N. 2. 11. & ſeqq.
(*d*) Animad. 2.
(*e*) 26. n. 25.
(*f*) Expoſ. Anat. tr. du bas Ventr. n. 267. & ſeq.
(*g*) Comm. in § cit.

You have an obſervation from Helwich (*b*), of a conſiderably large artery, that is, of the ſplenic, being wounded; and of the aorta being perforated (without the inteſtines, which lie before it, being injur'd) at the very diviſion into the iliacs, from Dillenius (*i*). And you may read examples of the vena cava being wounded, in the Sepulchretum, from Hildanus (*k*), and Paaw (*l*): and thereto you may add an example, from Bohn (*m*), of the internal iliac vein; from which you yourſelf will perceive what may often be an obſtruction, for ſome ſpace of time, to the blood which is about to flow, not only from the cavity of the belly, as I ſaid a little above, but even from the vein itſelf which is wounded. To return, however, to my obſervations which relate to wounds of the belly: as the laſt of them was that which I took from a young man that was ſervant to a miller; now take ſome which relate to blows and compreſſions of the ſame part.

39. Another miller, but this an old man, falling down upon a ſtone, hurt the very ſide of the right epicolic region. For which reaſon, and becauſe he then, by means of coughing, expectorated blood, though in a ſmall quantity, he came into the hoſpital. More than fifteen days being elaps'd, and he in the mean while making ſcarcely any complaint, and ſtaying there only on account of his poverty and feebleneſs, as it were, ſaid, upon being aſk'd, that he was coſtive in his bowels.

He had, at firſt, ſolutive clyſters adminiſter'd to him, which, however, return'd without any effect. After this, he ſaid that he had pains in his belly, and that his abdomen had lately become turgid and tenſe, like that of a tympanitic perſon: in the morning, therefore, an ounce of that medicine which is call'd diatartarum, was given him. This, however, had no effect; except that, on the following night, the old man diſcharg'd a great quantity of blood into his bed, without knwing what he had diſcharg'd: and, at the ſame time, he threw up from his ſtomach what he had taken in by way of ſupper. Soon after this, he was ſeiz'd with a deliquium, and ſoon after that with death, which happen'd on the ſame night; that is, a little before the end of November, in the year 1743.

The abdomen was not only tumid, at about the ſpace of three days from the time of death, but even at the thirtieth hour from thence; and it was already externally green, moreover. Upon the opening of this cavity, much water was found within; although in the feet there was not the leaſt beginning of an œdematous tumour. This water being exhauſted, the remaining parts were left in that ſtate for ſome hours, by reaſon of the very filthy odour they exhal'd. And when theſe hours were elaps'd, the internal ſurface of the peritonæum, alſo, was become green.

Then re-examining, with more diligence, thoſe things that had before occur'd to the eyes, I ſaw the omentum to be univerſally drawn up to the ſtomach; this laſt-mention'd viſcus not being at all diſtended: yet the ſmall inteſtines were very much diſtended, particularly the ileum, and that in the laſt turns thereof; to appearance, from the air which was included therein.

(*b*) Eph. N. C. Dec. 3. A. 9, & 10. Obſ. 120. ſub A. 1698.
(*i*) Dec. ead. A. 7, & 8. Obſ. 166.
(*k*) Sect. hac 3. Obſ. 25. § 18.
(*l*) Ibid. § 19.
(*m*) De Renunc. Vuln. Sect. 1.

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The extremity of the ſame ileum, and the beginning of the colon, were of a bright red colour, inclining to brown: whereas the neighbouring cæcum, the appendicula vermiformis, and the remaining part of the colon, were of a natural colour; and the whole left part of this inteſtine, and the rectum, were very much contracted.

Yet that portion of the abdominal muſcles, which had been in proximity with the beginning of the colon, appear'd to be black and livid on the internal ſurface, as if from contuſion. But neither this, nor that part of the inteſtines, which I ſaid was of a preternatural colour, had any thing hard or tumid in them. We could not examine the internal ſurface of the inteſtines, by reaſon of the very diſagreeable and almoſt intolerable odour. The liver was pallid: the ſpleen was larger than it naturally is: the glands of the meſentery were not ſo ſmall as to make it neceſſary to open the fat in order to bring them into ſight.

In both the cavities of the thorax was no very ſmall quantity of reddiſh water: in the pericardium was more than uſual; but it was not in ſo great a quantity as the former, nor of ſo red a colour. The left lobe of the lungs was, in ſome part of it, connected with the pleura; yet both this lobe and the right were ſound.

Upon opening the cranium, and removing the dura mater; under the pia mater, in ſome places, were obſerv'd a few air-bubbles, and that appearance of a kind of jelly alſo. The veſſels which creep through this membrane were moſt of them diſtended with blood; but ſtill more thoſe which run on the ſides of the ſeptum lucidum: and, indeed, from the ſubſtance of the medullary part of the cerebrum, drops of blood were prominent, as we cut into it. And theſe appearances I attended to ſo much the more, as I had obſerv'd a ſmaller quantity of blood than uſual, in the larger veſſels of the belly and thorax. There was no water in the ventricles of the cerebrum, and the ſubſtance thereof was itſelf ſufficiently firm: but I found the cerebellum to be very lax, and the pineal gland ſtill more ſo; though theſe parts, and others, which it is not neceſſary to mention here, I did not diſſect later than on the fourth day after death.

40. This man, indeed, died very late from a blow of the abdomen: but another, in this city, very ſoon; and, as I ſuppoſe, about the year 1670, when Jacob Sandri, whom I have already mention'd to you, as one of my preceptors at Bologna, was here upon his ſtudies. What he related to me, I ſhall give you in juſt as many words.

41. A certain man being ſtruck on the navel, by the kick of a horſe, fell down dead immediately, like an apoplectic perſon. When he was diſſected, there was no other preternatural appearance but a lividneſs, and blackneſs, of the inteſtines correſponding to the part which had been ſtruck.

42. Upon hearing this relation, when I was a young man, the obſervation of Hildanus (*n*) came into my mind, of a young man falling down ſoon after having the umbilical ligament of the liver cut through, and dying very ſoon. But afterwards; when I obſerv'd that neither reaſon, nor the greater part of authors, aſcrib'd great effects to the injuries of this ligament; I ſet aſide that

(*n*) Cent. 1. Obſ. 53.

thought,

thought, and happen'd to light on another, to which the obſervations of Bohn (*o*), and others whom he quotes, and ſome of Benivenius (*p*) beſides, ſeem'd to lead me: I mean of blows on the abdomen, cauſing a ſudden proſtration of ſtrength in thoſe who receiv'd them, and even ſuddenly killing; by reaſon, as he ſuppoſes, of the very violent concuſſion and convulſion of the diaphragm, from whence ſuffocation and aſphuxia may be brought on.

However, as the blows, of which he ſpeaks, do not relate to the navel, but to the epigaſtrium; for this very reaſon, and ſome others, I myſelf withhold my aſſent: but you are at liberty to think as you pleaſe.

43. To violent compreſſions of the abdomen would relate, in preference to others, that which the carman ſuffer'd from the wheel of a cart being driven over his belly; from whence the moſt conſiderable inconveniences, and the largeſt aneuriſm of the great artery, that I have ever ſeen, proceeded; if I had not deſcrib'd this hiſtory to you already in the fortieth letter (*q*).

But in regard to wounds and blows of the loins; whereto belong the obſervations of thoſe celebrated men, Verdrieſius (*r*), and Quelmaltz (*s*); as at preſent I have none of my own at hand; and as I have more than one of thoſe that relate to wounds, or compreſſions, of the limbs; I will paſs over to theſe.

44. A ruſtic man, who had a pretty good habit of body, being at work about wood, fix'd ſeveral ſplinters of it very deep into the palm of his right hand; the wound correſponding, pretty nearly, to that interſtice which is betwixt the bones of the metacarpus, that lie under the fore-finger and the middle-finger: nor did he ſhow the wound to any ſurgeon, or phyſician, till after he was ſeiz'd with convulſive motions of that whole limb.

Therefore, on the eighth day, from the time of receiving the wound, he was at length brought into this hoſpital. Blood was then firſt taken from his left arm; freſh-drawn oil of almonds was given him; oil of turpentine was applied to the wound; the right limb, and the ſpine, were anointed with ſuch liniments as are uſeful againſt convulſions; and ſome ſplinters of wood were extracted from the wound; but all was in vain: and that not only for the reaſon which I ſhall give you juſt now, but alſo becauſe the effects of a diſorder, which was entirely neglected for ſo long a time, had become very deeply rooted in the habit; and the whole limb was manifeſtly drawn upwards, by very frequent convulſive motions.

Wherefore, within forty hours, from the time of his being brought thither, he died: and this was at a time when I was demonſtrating the ſtructure of the human body to the pupils there, on other bodies; for it was now near the end of November, in the year 1742; I therefore made uſe of this alſo. But at preſent I will, according to my cuſtom, paſs over other things; and will take notice only of thoſe that relate to the wound, or to appearances not quite natural.

The hand and the arm were not very tumid. The wound had a narrow orifice; and the ſhape of it was nearly circular: and ſo deep was it, that it

(*o*) De Renunc. Vuln. S. 1. & S. 2. c. 3.
(*p*) De abdit. & c. morbor. cauſis, c. 110. in fin.
(*q*) n. 26.
(*r*) Act. N. C. Tom. 1. Obſ. 86.
(*s*) Diſſert. de Pingued. § 17. in fin.

came through that interſtice of the bones, which I have ſpoken of, almoſt to the back of the hand: the tendinous expanſion of the pulmaris, the adducens muſcle of the thumb, which lies beneath it, and the interoſſei, not to ſay the lumbricalis, being perforated; the tendons of the muſcles that bend the ſecond and third joints of thoſe fingers, as well as the nerve which ran, as I ſaw, on the ſide of the wound, being moreover certainly injur'd, as you will underſtand from thoſe things which will be immediately ſaid.

For while we examin'd the wound thoroughly in the dead body; with ſuch freedom as it was impoſſible for the ſurgeon to make uſe of in the living body; we found a fragment of the wood, of the form of a parallelopiped; ſlender in its ſhape, but longer than the point of the little finger, in its tranſverſe direction, though not ſo broad by one half; ſo deeply buried, and ſo wedg'd and fix'd in, that it could not be got out without difficulty, nor without doing violence to the tendons of thoſe flexor muſcles which I have mention'd.

You ſee plainly then, that theſe tendons were much affected by the entrance of that fragment; and that, after it had enter'd, by confining the pus, which was diſcharg'd from the wound in but ſmall quantity, and almoſt like ichor, it had render'd it more acrid from ſtagnation, and, for that reaſon, more fit to vellicate thoſe tendons, or at leaſt that nerve, while it was ſlowly and gradually diſtill'd.

The veins, both internally and externally, were, in ſeveral places, diſtended with black and fluid blood: and this it was eaſy to obſerve, as we diſſected the thorax, the neck, and the head; and from thence it was very eaſy to know, that the cephalic vein was wanting in the left arm, not only below but above the elbow, except that, above, a very ſlight and ſlender reſemblance of it was found, at length, with ſome difficulty, and by means of a very accurate and attentive diſſection.

The head being cut off from the vertebræ, no water flow'd out from the tube thereof: and none of this fluid, in like manner, was in the ventricles of the cerebrum; in which the plexus choroides were, as I ſaw, of a brown colour mix'd with a great redneſs: and I ſaw a great number of ſanguiferous veſſels here and there, during the diſſection of the medullary part of the cerebrum, which had the ſame appearance. But the cerebrum, and the cerebellum, the medulla and the nerves, were of a proper firmneſs.

45. While I was deſcribing to you theſe very violent and fatal convulſions, which ſucceeded to a deep wound of the hand, they brought to my mind thoſe that came on after a very ſlight wound of the forefinger; which of themſelves, indeed, were not ſo violent, but ſeem'd more conſiderable than they really were, not only on account of thoſe ſymptoms which they had join'd with them, but by reaſon of the little animal that gave the wound, from whoſe bite nothing of this kind was expected.

A noble virgin of Verona, of ſixteen years of age, having, like Leſbia, that fellow-citizen of hers in Catullus (*), a ſparrow which ſhe fed, and with which ſhe play'd; endeavouring one day to take it from her right ſhoulder (on which it had happen'd to hop) with her left hand, the miſchievous little

(*) Carm. 2. & 3.

animal

animal bit her fore-finger with a very violent ſtroke of its beak, and wounded it, on the external part, in the very joining of the firſt and ſecond internode. It was plain, from the appearance of the finger, that ſome nervous part was wounded, beſides the common integuments; for it was immediately bent, and could be no more extended, or mov'd: and for that reaſon it became leſs movable ſoon after, when pus was form'd in the wound, the pain being encreas'd, and the hand alſo becoming contracted and ſwollen.

To theſe ſymptoms was added a fever of ſome days. Which fever, however, as well as all the ſymptoms I have mention'd, together with the ſwelling of the hand and finger, were remov'd, to all appearance, by a ſpeedy and happy cure. But ſcarcely had they brought about this cure, when, lo! on the fourteenth day from the time of her finger being wounded, a ſudden tremor, which began firſt in her feet, and ſoon after in her hands, and was from thence propagated through the whole of her body, ſeiz'd upon the virgin, and brought with it a dangerous and long ſyncope: on the going off of which her tremors did not for that reaſon go off; but being join'd with a groaning, and ſometimes with a kind of howling, continu'd many hours: till at length opening her eyes, and relaxing the lower jaw, which was forc'd cloſely againſt the upper, ſhe return'd to her ſenſes, being quite ignorant of all that had paſs'd.

But after a very ſhort interval, all theſe ſymptoms return'd again in the ſame order, more ſlightly indeed, and for a ſhorter time; but were ſo frequently troubling her, that every day ſixteen or twenty attacks were reckon'd up. And now this had been the ſtate of the caſe for ſix days, when I was conſulted, by letters relating theſe facts; which letters bore date the laſt day of Auguſt, in the year 1743. I was not very well pleas'd, upon calling to mind the aphoriſms of Hippocrates (*t*), that the fever had, in this caſe, been put to flight by the Peruvian bark; and that the wound had been ſo ſoon brought to a cicatrix: as I remember'd that it was the opinion of Celſus (*u*), according to the reading which, as I have ſhewn in a former work, ought to be retain'd (*x*), "that almoſt every bite has ſome virus;" and that Matthias Tilingius (*y*), Jo. Georg. Sommerus (*z*), and, before theſe, John Schenck (*a*), had been of the ſame opinion, on account of the very violent ſymptoms which ſucceeded the bite of a gooſe, and of a cock likewiſe: the latter of theſe authors from the obſervations of Baccius, the former from their own.

However, as we obſerv'd that all theſe bites had been applied to the hands or to the fingers, (as in the caſe in queſtion) parts which, either becauſe they are furniſh'd with ſo many tendons, or from any other more juſt cauſe, are certainly often liable to conſiderable and violent diſorders, even without any virulent infection, when lacerated and contus'd; I gave ſuch an anſwer to the letter, as, whether the paroxyſms had taken their origin from the too haſty occluſion of the wound, or, on occaſion of the wound itſelf, had had

(*t*) S. II. 26. & IV. 57.
(*u*) De Medic. l. 5. c. 27.
(*x*) In Celſ. Epiſt. 1.
(*y*) Eph. N. C. Dec. 2. A. 2. Obſ. 75.
(*z*) Dec. ead. A. 10. Obſ. 82.
(*a*) Obſ. Medic. l. 7. S. 1. Obſ. 13. in fin.

the ſame origin as in hyſterical perſons (for the virgin was of a ſanguineous temperament, inclining to melancholy, and full of juices, and yet did not diſcharge a ſufficient quantity of blood every month from the uterus, in proportion to the quantity of her humours); I ſay, I gave ſuch an anſwer as recommended what ſeem'd to me the moſt proper methods to be taken. But whether by the help of theſe methods, or by the ſtrength of nature, and increaſing age, all theſe ſymptoms were carried off; it is at leaſt certain, that I heard no more complaint of theſe diſorders afterwards.

46. A woool-comber quarrell'd with another wool comber, who was, I believe, his uncle, either by the father's or the mother's ſide; but certainly a relation. Both of them were heated with wine, which they had drank in great plenty, as moſt of the common-people are wont to do here on the eleventh of November; for that was the day, in the year 1745. In the night-time, at length, they went from words to blows. The firſt happen'd to fall down, being lame of his right ſide. The other wounded his thigh, as he lay, with a knife, and even pierc'd it through. For the point of the knife, entering a little above the knee, on the anterior and internal ſide, had come out again on the poſterior and external ſide. A great effuſion of blood was inſtantly made from the wound at both orifices; and this hæmorrhage, as it was an unſeaſonable time of night, not only could not be reſtrain'd by thoſe who were about him, but could not even be prevented from carrying off the man, when brought into the hoſpital, within ſix or ſeven hours.

The body being lean, but within the bounds of health, was proper for the proſecution of our anatomical ſtudies: and the time of the year was not unſuitable. Wherefore, on the twelfth and on the following days, we diſſected it with accuracy. But ſome things that I obſerv'd I have referr'd to other writings; and the cauſe of the lameneſs itſelf, which I plainly ſaw, to another letter (*b*).

We will now add what remains. And, firſt, upon opening the wound carefully, the cauſe of ſo great an effuſion of blood came into ſight. For we found that the crural artery, where it goes to the ham, and the attendant vein, were, in great meaſure, cut tranſverſely.

In the belly, moreover, the omentum, which was moderately fat, was drawn up to the ſtomach, both on the left and right ſide. The ſtomach was full of wine; yet no chyliferous veſſel was found creeping any-where through the meſentery or inteſtines. The ſmall inteſtines, except the duodenum alone, were of a brown colour inclining to cineritious: that part of the colon which paſſes tranſverſly, in the whole of it, and a portion of the parts that lay neareſt to it on both ſides, were contracted almoſt to the ſize of a man's thumb.

The gall-bladder was alſo contracted; and this appear'd, not only from the ſmall quantity of bile which was in it, but alſo from the cavity which was hollow'd out in the liver to receive it: for though this ſhould have correſponded to the veſicle in latitude, it was much wider than the veſicle. The kidnies were pretty large; the ſpleen was ſmall, and of an unuſual kind of

(*b*) Epiſt. 56. n. 14.

figure,

figure, yet not leſs ſound than the kidnies; except that, while I cut into it, it ſeem'd to me to be ſomewhat more firm than it ought to be.

In the thorax, the lungs, which were in other reſpects ſound, had ſo collaps'd into themſelves, that I ſcarcely remember to have ſeen any that were leſs extenſive in their bulk: but the right lobe was moſt collaps'd, as it was connected only, at its upper part, by a lax, and not very broad, membrane, to the pleura; whereas the ſide of the left lobe was, in great meaſure, very cloſely connected to the pleura. That they had thus collaps'd, and yet were, if you except the poſterior ſurface, as in propriety we ought, of a cineritious colour inclining to white, was owing to the very ſmall quantity of blood which we obſerv'd to remain in the larger veſſels, both of the belly and thorax; for the muſcles were, in other reſpects, of a very beautiful colour. And even the heart was quite depriv'd of blood; ſo that in the right auricle was nothing more than a very ſmall coagulum. This inclin'd to the nature of a polypous concretion; whereas all the blood which was contain'd in the ſeveral other parts of the body, was fluid.

47. If a ſkillful ſurgeon could have been at hand immediately upon the infliction of the wound, by applying the tourniquet, and conſtringing the femur, above the wound, he would, at leaſt, have preſerv'd the patient ſo long, as to give time to conſider of amputating the limb. For the tranſverſe inciſion both of the artery and of the vein, in great meaſure, would have render'd ineffectual the other methods of cure, which are not only prudently propos'd by the celebrated Heiſter (*c*), but alſo have been ſucceſsfully put in practice, when this artery was wounded almoſt in the ſame place, though in a longitudinal direction.

Nor could an inciſion of this kind, join'd with ſo great a fluidity of blood, afford us even the miſerable hope that the grumous blood (as you will find, from the Sepulchretum (*d*), that Bartholin had ſeen in a caſe of this kind) ſhould ſtop up the wound for ſome days by its coagulum.

However, in regard to the cure of wounds of the veſſels, in whichſoever limb they may happen; when they admit of other cures, or when they admit only of amputation; read the many obſervations produc'd by John Bohn, in his book *De Renunciatione Vulnerum Lethalium* (*e*): and you will not wonder that this very great man is ſo often commended by me in theſe letters, when you obſerve either the number of the examples that he has given, or the perpetual ſilence that there is in the Sepulchretum in reſpect thereto; or, finally, when you know what I owe to his memory, who, beſides other acts of friendſhip, when he was an old man, ſent this book to me with great kindneſs, together with his other books, at the time I was but a young man.

48. To violent compreſſions of the lower limb ſeems to relate the caſe of a certain young man, who died in the hoſpital of St. Mary de Morte, and was diſſected when I happen'd to be at Bologna, in the beginning of the month of June, in the year 1709.

49. A young man, of two-and-twenty years of age, having the wheel of a cart paſs over almoſt the lower part of the left heel, ſeem'd to have receiv'd

(*c*) Diſſert. de Arter. Crural. Vulner. n. 6. & ſeqq.
(*d*) Sect. hac 3. Obſ. 26. § 8.
(*e*) Sect. 1.

no

no other diſadvantage from it but this, that the common integuments were torn away. While the cure of an injury which appear'd ſlight went on very well, behold! after ſome days, the neck and the back become rigid; ſo that, as if he had been ſeiz'd with a kind of tetanos, he could move his limbs indeed, but could not move either his neck or his back. To this was added, that, at intervals, he was ſhaken by the moſt violent tremors of the whole body. And all theſe ſymptoms going on, in this manner, for twenty days or more, his ſenſes being always perfect, he having thrown up a round worm by vomiting, and the ſtertor being much increas'd, he died.

The foot being examin'd about the evening of that very day on which he died, the heel was found to be almoſt heal'd.

The abdomen, which was turgid, being open'd, a ſmall quantity of water was ſeen to be extravaſated therein; all the inteſtines, and the ſtomach itſelf, being ſound, but diſtended with air, to a very great degree. Within the colon, near to the appendicula vermiformis, was a round worm dead.

The thorax alſo had a ſmall quantity of water effus'd in its left cavity: the lungs of that ſide were hard poſteriorly, and of a ſubſtance like that of the liver. There were polypous concretions in the large veſſels, and in the ventricles of the heart; in the right of which cavities there was blood alſo, together with airy bubbles.

Upon opening the cranium, in the right lateral ſinus of the dura mater was coagulated blood; in the other was ſeen a fluid blood, not without ſome pretty large bubbles. There were many bubbles alſo under the pia mater, eſpecially about the left anterior lobe of the cerebrum. Under the ſame membrane was water beſides; the taſte of which water ſeem'd, to one who was willing to taſte of it, to be nothing at all, or at leaſt nothing more than a ſlight ſaltneſs. In the ventricles of the brain was a pretty large quantity of water. And no ſmall quantity was diſcharg'd from the tube of the vertebræ, eſpecially when I order'd the loins and the os ſacrum to be rais'd up. The cerebellum was lax, the cerebrum was firm: and the ſanguiferous veſſels, that crept through the ventricles of the cerebrum, and the plexus choroides, were not at all of a white colour.

50. What Valleſius (*f*) thought of that young man of Hippocrates, who had run through a rough way, and who had, from thence, "a pain in his "heel, eſpecially at the lower part;" which part, and the neighbouring parts about it, becoming black, "he liv'd in all but twenty days after "having run thus;" and what, in like manner, Augenius (*g*) thought, when he was ſpeaking of many perſons who had periſh'd from ſlight wounds, and particularly of M. Sobrirantius, "who, contrary to the expectation of all, "died on the fourteenth day after a very ſmall wound was inflicted on his "heel;" I mean, that from ſlight external cauſes of this kind ariſes no more than the occaſion of the diſeaſe; but from the bad habit of body, and from the malignity of the juices, ariſe the violent ſymptoms, and even death itſelf; will certainly ſeem to you reaſonable to be determin'd in this caſe: and this ſo much the more, as the worms, and the very quick extrication of

(*f*) Comment. in l. 5. Epidem. n. 47. (*g*) Tom. 1. l. 9. Epiſt. Medic. 2. vel potius 3.

the

the air-bubbles from the blood and humours, may be conſider'd as marks of the deprav'd diſpoſition of thoſe humours, or, as the ancients ſpoke of it, the putrefaction thereof.

Indeed, I do not deſpiſe tokens of this kind taken from Hippocrates himſelf (*b*), where he has ſaid, "that men die from wounds of every kind, and "ſuch as are in no reſpect conſiderable; nor need we be ſurpriz'd at this - - -, "when we conſider that - - - - the bodies of men differ ſo much from each "other." And, beſides, you know that I am not ignorant of this ſaying of Valerius, as I have ſpoken of it to you on a former occaſion (*i*): "the end "of our life being expos'd to various and occult cauſes, they ſometimes, "undeſervedly, bear the reproach of being fatal; whereas they happen rather "at the time of our death, than are themſelves the cauſes of it." Finally, in this very letter (*k*), when I related the caſe of that virgin of Verona, which was follow'd by violent ſymptoms, you might ſee how much I aſcribe to tokens of this kind.

Yet if any happen, either in this caſe or that, to conſider both the nature of the part, which was wounded by the external injury, and the kind of ſymptoms which have come on; that is to ſay, convulſions, from whence moſt of the circumſtances of diſeaſe, that happen'd not only in that virgin, but in this young man, might ariſe; for the veſſels being conſtricted here and there, and the motion of the lymph and the blood being retarded for a long time, not only a ſyncope, but extravaſations of water, and inflammation of the lungs, are eaſily brought on; if any one, I ſay, in conſideration of theſe things, ſhould chuſe rather to aſcribe ſomewhat more than the occaſion of theſe morbid affections to the cauſe which is accidentally applied from without, I ſhall not conteſt it with him very obſtinately. Farewel.

LETTER the FIFTY-FIFTH

Treats of Ulcers and Sphacelus,

1. AS the beginning of the ſection which is thus entitled, and is the fourth in this fourth book of the Sepulchretum, begins with the conſideration of *Achores* and *Tinea*; it does not ſufficiently appear, why thoſe obſervations, alſo, of *Lepra*, *Pſora*, and of *Tinea* itſelf, ſome of which you will at length find in the beginning of the eleventh ſection, and one near

(*b*) Prædict. l. 2. n. 19. & 20. apud Marinell. (*i*) Epiſt. 26. n. 14. (*k*) N. 45.

the

the end of the twelfth (*a*), are not comprehended therein. And the reaſon, certainly, was not leſt this fourth ſection ſhould be more prolix than it ought to be; for thoſe obſervations which are referr'd to other places, are few, and this ſection is ſhort; eſpecially if you take away the ſcholia, and out of thirteen obſervations, which are propos'd under number ten, you obſerve that ten have already been produc'd in other places, and that one out of this very ſame number has been ſet down twice over here (*b*). Which circumſtances I was willing to take notice of, leſt you ſhould be ſurpriz'd, that I, who am determin'd to make no repetitions, ſhould have ſcarcely any to relate in the preſent letter.

2. For that I alſo may begin with achors and ſcabies: if you ſhould deſire to know what appearances were found by Valſalva, or by me, in bodies that had been infected with theſe diſorders; you will readily find them in the tenth (*c*), the ſixteenth (*d*), the thirty-eighth (*e*), and the forty-firſt letters (*f*), and in others. In reading of which over again, I would have you obſerve, that, in conſequence of theſe little ulcers being dried up, either of themſelves, or by any kind of unctions whatever, an infant periſh'd by convulſions; a virgin, by a dropſy of the thorax and pericardium; a woman, by an acute fever and tympanites; and a young man, by a ſuppreſſion of urine: and that the cauſes of death had ariſen from the occluſion of the little ulcers; for, as when open and diſcharging they kept off diſeaſes, or, as was manifeſt in the infant and the woman, even remov'd them; ſo when dried up, they retain'd in the blood thoſe ſtimulating particles, and noxious humours, which were before eliminated and diſcharg'd thereby; and which were ſoon afterwards effus'd, in almoſt all of them, either betwixt the meninges, or into the belly, or into the thorax, which I found to be full of a blueiſh water in the virgin whom I have mention'd.

In the beginning of the eighteenth letter (*g*), you will alſo light on the hiſtory of a ſhoemaker, whoſe body was cover'd over with a very ſmall ſcabies. And there conſider over again with yourſelf, I beg of you, that if any one ſhould have attempted to drive this away by an unction, how much more he muſt have increas'd the diſeaſes of the relax'd and extenuated paries of the left ventricle of the heart, and of the great artery annex'd thereto; which was, internally, aſh-colour'd and unequal: and that by confining thoſe eroſive particles. This you will believe the more readily, if you now call to mind what happen'd to Trombelli (*h*) from having a herpes repell'd.

Moreover, you will ſee, that with theſe obſervations of Valſalva, and with mine, agree what are advanc'd in the beginning of this fourth ſection of the Sepulchretum: in one obſervation, for inſtance (*i*), on a prince of two years old, in whom the achores having entirely vaniſh'd, a bloody water, and in conſiderable quantity for ſo ſmall a body, was found under the cranium; and in another (*k*), taken from a woman, who having been cur'd of the tinea by lotions, had one hemiſphere of her brain putrid, and fill'd

(*a*) In Additam. Obſ. 6.
(*b*) § 6. & 8.
(*c*) N. 9.
(*d*) N. 34.
(*e*) N. 22.
(*f*) N. 4.
(*g*) N. 2.
(*h*) Epiſt. 26. n. 39.
(*i*) Obſ. 1. § 1.
(*k*) Ibid. § 2.

with

with a citron-colour'd ichor. To which if you would have others to add, they will not be found wanting; and in particular two, the one from Schulzius (*l*), ſhowing, what, and how many diſorders of the viſcera ſucceeded a very conſiderable humid, and long-continued ſcabies, when repell'd by an external remedy; and the other from Lanzonus (*m*); which ſhows, that diſeaſes were found in the brain, the diaphragm, and the liver, when an acrid tinea, and a foul ſcabies, had been remov'd by unction.

3. But even without the diſſection of dead bodies, what phyſician is there who has not ſeen internal, or external, diſorders, often ariſe from the retropulſion of a ſcabies, or of achores? you remember that Valſalva was conſulted in regard to a tumour (*n*), which, whether it was a real exoſtoſis of the knee, or only bore the appearance of it, had certainly ſucceeded to the cauſe whereof I am ſpeaking. And what external or internal diſorders Gerbezius (*o*) ſaw from the ſame cauſe, and among theſe diſorders malignant fevers; which Lanzonus (*p*) obſerv'd more than once, and thoſe of a fatal conſequence; and, in like manner, that Dethardingius obſerv'd an aſthma (*q*), and Cummius (*r*), who is referr'd to by him, an apoplexy; you will learn from inſpecting their obſervations.

It would be very eaſy to add a great number of others, either if there were occaſion, or if I were not about to take notice of them below (*s*). Wherefore, though I could alſo produce a great number of my own obſervations in this place, I will give you no more than two, and thoſe made both in one month; I mean in February, of the year 1710, on two noble fellow-citizens of mine.

In one of theſe gentlemen, little ulcers of the head, juſt like thoſe that we call achores in infants, had been dried up by the injuries of the nocturnal air; when, ſcarcely eight days having paſs'd from that time, he was ſeiz'd with a malignant fever, attended with vomitings, and finally with a ſingultus: in which fever; although the pulſe was very weak, and other bad ſymptoms were not wanting, beſides thoſe that I have mention'd; he, nevertheleſs, always ſeem'd to himſelf to be in good health: for this reaſon, his phyſician, who was a man of age and experience, was not call'd in till late; when, notwithſtanding he did whatever lay in his power, and notwithſtanding I alſo was call'd in on the laſt days, and both of us did whatever we thought moſt proper, he periſh'd on the ninth day of the diſeaſe.

The other labouring under a very ſimilar diſorder; if you conſider'd the eroſion of the ſkin, and the cruſts with which the arms were firſt affected, ſoon after the legs alſo, and finally ſome other parts; and having, by the advice of I know not whom, made uſe of a ſhirt medicated with the fumes of ſulphur, got rid of almoſt all the diſorder of his ſkin indeed, but was, at the ſame time, ſeiz'd with rheumatic pains of the whole body, join'd with a

(*l*) Act. N. C. Tom. 1. Obſ. 231.
(*m*) Eph. eorund. Dec. 3. A. 9. & 10. Obſ. 113.
(*n*) Epiſt. 50. n. 13.
(*o*) Eph. cit. Dec. 3. A. 2. Obſ. 167.
(*p*) Ejuſd. Dec. A. 9. & 10. Obſ. cit. 113. & Obſ. 16.
(*q*) Append. ad Dec. 3. A. 5. & 6. n. 8. in Obſ. Parallel. ad Obſ. 58.
(*r*) Dec. 1. A. 1. Obſ. 58.
(*s*) n. 7.

fever; which not only prevented him from ſleeping in the night, but alſo, in the day time, render'd him incapable of turning himſelf from one ſide to another: and indeed began to affect even the tongue itſelf, and the œſophagus.

I endeavour'd to obviate theſe ſymptoms ſpeadily and diligently. But if nature had not aſſiſted us, by expelling the repell'd matter, partly to the ſkin, and partly to the inteſtines, where it tended ſpontaneouſly, we ſhould certainly never have ſeen theſe pains critically ſolv'd within a month; nor the ſkin perfectly heal'd within the next ſpring: nor would the patient have got ſafely over this diſeaſe, ſo as to live to an extreme old age.

Indeed there is no phyſician whatever, to whom caſes of this kind, as I ſaid, have not occurr'd; even from the very time in which Hippocrates, firſt of all (*t*), took notice of that Athenian, who, being affected with a very violent prurigo of the whole body, and having ſuch a thickneſs, and appearance of ſkin, as reſembled a leproſy, made uſe of the warm baths that are in Melos, and "was freed from the itching, and thickneſs of ſkin, indeed, "but became dropſical and died." Martianus (*u*) ſuppos'd, that the waters of theſe baths were ſulphureous: Pliny certainly has ſaid (*x*), that "in "the iſland of Melos was very excellent ſulphur:" and Dioſcorides aſſerted, that it was "generated there in great quantity."

4. Theſe things, and thoſe in particular that I have taken notice of, in regard to diſeaſes that follow the repulſion of a ſcabies by unction, will, without doubt, induce you to enquire of me, what I therefore think of thoſe very minute animalculæ; which, as very induſtrious men have obſerv'd them in our age, and have aſſerted to be the only cauſe of a ſcabies, they have alſo aſſerted, might be eaſily exterminated, by ſulphureous, and other remedies, which kill theſe animalculæ, externally applied; and this at any time of the year whatever, and without attending to any internal methods of cure whatever; for that the cauſe being, by theſe means, remov'd, the ſcabies very ſoon, and very ſafely, vaniſh'd; without any inconvenience, not to ſay any diſeaſe, being the conſequence.

I however, to deal ingenuouſly with you as uſual; will firſt admoniſh you, not to aſcribe more to learned men than they claim to themſelves. For as to the diſcovery itſelf, nothing is more eaſy than to ſhow, that theſe animalcules had been already known, even to much more ancient authors than they acknowledge. I do not ſay to thoſe writers, who I ſee are objected by ſome one from Daniel Sennertus (*z*), where he ſpeaks of worms of the back; and ſtill leſs to thoſe, who have formerly taken notice of the *vena Medinenſis*, as it is call'd, after Velſchius (*a*), which is alſo confirm'd by Wepfer, as you will perceive from the preceding third ſection of the Sepulchretum (*b*). But I ſay, to thoſe who have ſpoken of far leſs, and certainly ſhorter, animalcules, in the ſame kind of words as Abinzoar in Joannes Langius (*c*).

(*t*) Epid. l. 5. n. 4. apud. Marinell.
(*u*) Annot. ad hunc Hippocr. locum.
(*x*) Nat. Hiſt. l. 35. c. 15.
(*y*) De Medic. Mat. l. 5. c. 83.
(*z*) Medic. Pract. l. 2. P. 2. c. 24.
(*a*) Exercit. de Vena Medin.
(*b*) ad Obſ. 26. Schol. n. V.
(*c*) l. 2. Epiſt. Medic. 42.

For

For there are, says Abinzoar, "*syrones*, or *pedecelli*, call'd by the Arabians, *assoabat*, which creep under the skin, both in the hands and the legs: they also excite pustules, full of water, under the skin, where they lie hid: which pustules being cut into, the animalcules creep out; but are so small, as scarcely to be found out by the sight, though very quick and piercing."

That the form thereof, was also not unknown to others before, by the assistance of the microscope, is not only shown by the observations of Borelli, that are taken notice of by Velschius (*d*); according to which the *syrones* "resembled tortoises in their forms;" but is particularly confirm'd by that observation, of Etmuller, upon the syrones, which being publish'd in the first volume (*e*) of the *Acta Eruditorum Lipsiæ*, besides that it mentions others who had seen them before, gives an idea of the animalcules themselves, both by figure and description; in such a manner, indeed, that the description, and the figure, might both of them be render'd more perfect a few years after, but could not be produc'd in public as quite new discoveries.

Many things also, which relate to the origin of the scabies, the multiplication, and the easy communication thereof by contact; and not only this, but the easy cure of it by certain remedies externally applied; and to other circumstances of this kind, might be illustrated by clear explications. But while that external cure is recommended, without paying any regard to the internal, the same thing seems to have happen'd to these learned men, that happen'd to Van Helmont (*f*), who likewise recommended the former, and disapprov'd of the latter.

For although Van Helmont acknowledg'd, besides the scabies from contact, that also which arose spontaneously (*g*); yet, as he determin'd to each the same nature, so he also fix'd the seat of their semen, or ferment, in the skin only. In which alone, these authors so much the more readily determine, that all the disorder adheres, as in this part only, those animals form their niduses: and they assert, that if there were none of these animals in the world, there would also be no scabies; as this disorder never seizes upon any one, unless he has got these animalcules from some other place. Let us see then, what the authors of such kind of dogmata will be led to teach from each of them; and what doctrines that are partly true, and useful, in regard to the cure, and partly less true, and less safe, in that respect, will result therefrom.

5. That very prudent, and at the same time, very learned, physician, Ballonius (*b*), having lit upon the opinions of some persons, in regard to disorders of the skin, that agree with those I spoke of just now; in dependence upon reason, experience, and the doctrine of Hippocrates; suppos'd that there are three kinds of disorders of the skin, which are cautiously to be distinguish'd from each other: that some are disorders of the skin itself as it

(*d*) Exercit. cit. c. 7.
(*e*) A. 1682. M. Septembr.
(*f*) Tract. 45. inscripto Scabies & cæt.
(*g*) Ibid n. 11.
(*b*) Epid. & Ephem. l. 1. Constit. Hyem. A. 1574.

were; ſome abſceſſes of the internal parts; and others, of a middle nature, betwixt both.

Nor has he omitted the ſigns by which we may diſtinguiſh the one from the other: nor has he doubted but, where there are diſorders of the ſkin only, "we muſt then apply ourſelves to the cure of that external diſorder "only, without teazing the internal parts by purgative medicines."

And indeed he has ſhown, that thoſe "broad puſtules" of Simon; of whom Hippocrates (*i*) has ſaid, "that he found relief when they were anointed by the fire, or waſh'd with warm water;" but that vomiting was of no advantage; were certainly of the ſame nature. And that in particular relates to the point in queſtion, which you will read remark'd upon thoſe words of Ballonius (*k*): "when any one lies with a perſon affected with a "ſcabies, and the ſkin is infected, this diſorder is really cutaneous, and the "cure ought to be quite ſuperficial."

You ſee then, what there is true, or uſeful, in that external cure alone, the internal being entirely omitted, when any perſon, that is quite in good health, has juſt before contracted a ſcabies from the contact of a ſcabious perſon, or from the contact of his linen, or clothes: but you ſee, at the ſame time, what there would be leſs true, and leſs uſeful, in that ſame doctrine of cure, if the ſcabies were not a diſorder of the ſkin alone, but either an abſceſs entirely, or an abſceſs join'd together with a diſorder of the ſkin.

Nor can we eaſily aſſent, when it is ſaid, that a ſcabies never ariſes but from the contact of a ſcabious perſon, or from his animalculæ. Does it never riſe from naſtineſs? never from improper eating and drinking? It certainly ſeems otherwiſe to moſt phyſicians; and amongſt theſe to Sennertus, whom I have commended in the ſecond epiſtle upon Samonicus, and who wrote the following lines to Samonicus (*l*); if he really did write them, as I have there endeavour'd to ſhow, and explain:

Illotus ſudor, vel copia inutilis eſcæ,
Sæpe gravi ſcabie correptos aſperat artus.

Does it not ſometimes ariſe from violent and long-continued diſorders like a criſis? and, to omit other cauſes, does it not ſometimes ariſe from handling the wool of diſeas'd ſheep? certainly, what happen'd formerly at Venice, and in the country thereabout, Virgil related (*m*), when ſpeaking of fleeces of this kind,

——— inviſos ſi quis tentarat amictus;
Ardentes papulæ, atque immundus olentia ſudor
Membra ſequebatur.

But this was not properly a ſcabies. I grant it. Yet it was a cutaneous infection. And why cannot a more ſlight infection be communicated in the ſame way, as this more violent one? Indeed the celebrated Werlhof (*n*),

(*i*) Epid. l. 6. S. 2.
(*k*) n. 10.
(*l*) De Medic. Præcept. c. 6.
(*m*) Georg. l. 3. in fin.
(*n*) Diſquiſ. de Variol. c. 4. adnot. 54. in fin.

being

being induc'd thereto by various obſervations, aſſerts, he ſhould readily believe, "that the true human ſcabies ariſes, firſt of all, from the wool of "ſheep, to which a diſorder, not unlike this, is every where frequent, "through improper paſture;" for as we almoſt all of us uſe woolen cloaths, and wear them for a long time together, "there are perhaps few in which "ſomething from unclean ſheep, or thoſe that are imperfectly cur'd, is not "mix'd: and perhaps it is for this reaſon chiefly, that the workmen, who "are employ'd in the manufacture of woolen cloth, are ſo much troubled "with theſe diſorders."

And Etmuller, the ſon, had publiſh'd, at Leipſic, in the year 1731, a *Programma de ſcabie ejuſque ortû ab impura lana* (*o*), in which, I ſuppoſe, he had ſaid the ſame things that he ſent to the *Cæſarean Academy Naturæ Curioſ.* (*p*), to be publiſh'd in the ſame year, and upon the ſame ſubject; aſcribing the puſtular ſcabies of a certain girl, to the wool wherewith ſhe cover'd herſelf, by night, inſtead of bed-clothes; a part of which wool, had been ſhorn from ſheep that were infected with a ſcabies.

In this paper he alſo quotes Coſchwizius, who had ſaid, that taylors are more frequently infected with this diſorder than others, by their conſtant handling of woolen clothes. Nor does he conceal the words of Elianus; "that whoſoever ſhall comb the wool of a ſheep torn by wolves, and make "a garment of it, will excite a ſcabies on the ſkin of the wearer:" either becauſe a ſheep of that kind, which is weak, from a very violent ſcabies, is unable to follow the reſt; or becauſe, being driven away by the others, leſt they ſhould be infected thereby; it, by this means, eaſily falls a prey to wolves.

Nor are the conjectures of theſe celebrated men to be ſlighted; becauſe, in this city, where ſo many men apply themſelves to the woolen manufactury, it is very rare that any one, even of theſe perſons, is found to have a ſcabies. For there are different paſtures in different countries; different waters, and perhaps different methods in ſelecting and cleanſing the wool: and now certainly, if in Venice any conſiderable infection ſeizes upon the ſkin of ſheep, their wool is not only rejected; but, leſt any one ſhould impoſe it upon us, it was our advice to the ſupreme magiſtrate of Venice, that preſides over the public ſafety, when, in the year 1724, I anſwer'd upon this queſtion, in the name of the phyſicians of this celebrated college; to cover, as Virgil ſays (*q*), "their carcaſes, together with their wool, in the "ground, and to hide them in pits, and holes of the earth."

6. But what will you ſay, if the very ſcabies of ſheep were owing to animalculæ, which are tranſferr'd by means of the wool to men? I do not chooſe to enquire whether, after ſo many cleanſings of the wool, which are added even by thoſe who dye the cloths, theſe animals can poſſibly live; notwithſtanding the human animalculæ are certainly deſtroy'd, when the linen is made clean by waſher-women. I rather chooſe, on the

(*o*) apud Haller. in Acceſſ. ad P. 9. Meth. Stud. Med. Boerh.; imo nunc ab eod. exhibit. inter Diſput. ad Morbor. Hiſt. ſub. n. CXCIII.

(*p*) Act. Tom. 3. Obſ. 50.

(*q*) loc. cit.

other

other hand, to aſk you to anſwer theſe things, which follow from ſome obſervations of Hoffmann (*r*), and Junckerus (*s*).

The former of thoſe authors writes, that a ſcabies had ariſen from an unſeaſonable uſe of acidulated waters. The other tells us, "that the juice of "the birch tree, drunk in a pretty large quantity;" and, in like manner, "that the hot baths of Walckenſtein; and theſe particularly in robuſt and "healthy bodies; are wont to bring on a ſcabies." I now, therefore, aſk of you, whether you think that in theſe baths, in that juice, and in thoſe acidulated waters, were to be found theſe animalcules, of which we are ſpeaking; ſo as to adhere to the ſkin while bathing, and to get out upon the ſkin, after having been taken into the internal parts of the body?

And the former of theſe authors ſays again (*t*), "it is neceſſary to ob-"ſerve, that the ſcabies, which is communicated by contagion, is always "more eaſy to be cur'd, than that which has taken its origin from the in-"bred depravity of the blood, and humours:" that is to ſay, without any ſuſpicion of contagion. He alſo mentions, as a proof thereof (*u*), the obſervation of Lanzonus (*x*), (who was, while he liv'd, my friend), of a ſcabies in a ſoldier, which encreas'd to ſuch a degree, on the three or four firſt days of the new moon, that he was oblig'd to paſs thoſe days in bed, every month, as long as the ſcabies continued; and it did continue for ſeventeen months.

And obſervations, in part ſimilar to this, that have been formerly remark'd by me, I could produce, and add to thoſe, not only that I have, more than once, ſeen it happen in ſcabious perſons, that while the fever was at its height, the itching ceas'd, and return'd at the decline of the fever; but that I know it, for a certainty, to have happen'd to a nun, that as often as ever ſhe was let blood; and it was often neceſſary for her to loſe blood; her ſcabies, which had already grown very ſlight, always encreas'd to a ſurpriſing degree. All theſe phenomena therefore, and others, which I purpoſely paſs over, being conſider'd, I aſk of you, to tell me candidly, whether they ſeem to you to be more eaſily explicable by ſuppoſing the ſcabies to ariſe from animalcules, than to take its origin from the blood?

Finally, I would alſo wiſh to know, if, in any perſon, an external cauſe bring on a very troubleſome itching in the ſkin; as, for inſtance, the bites of gnats, or injuries from any other little animals of that kind; and this perſon, indulging the itching, ſcratches the ſkin again and again, ſo that little ulcers ariſe, and reſemble a ſcabies; I would wiſh to know, I ſay, why the ſame perſon, or others, may not have an itching brought on from an internal cauſe, which compels him to ſcratch, and to lacerate the ſkin, juſt as when it is vellicated by thoſe animalculæ?

7. But leſt you ſhould happen to ſuppoſe, that I am more averſe to this hypotheſis of animalculæ, than truth and juſtice can warrant; I will firſt confeſs, not only that the origin of a ſcabies is often to be acknowledg'd

(*r*) Medic. Rat. T. 4. P. 5. c. 5. Obſ. 3.
(*s*) Conſp. Medic. Theor. Pract. Tab. 90. in Cautel. n. 19.
(*t*) c. cit. Theſ. Pathol. § 24.
(*u*) Ibid. § 21.
(*x*) Eph. N. C. Dec. 3. A. 9. & 10. Obſ. 205.

from

from theſe animalcules; but alſo, that they do ſometimes really exiſt, where you would not be very ready to ſuppoſe their exiſtence: ſo eaſily may they lie hid, by reaſon of their very minute ſizes, when they are transferr'd from one body to another.

Thus I remember that, when I attended an illuſtrious matron, in the place of my nativity, and ſhe was, at length, recovering from a long, various, and very difficult diſorder, a ſcabies ſeem'd to be added to the other criſes which had preceded; and this, coming on ſuddenly, ſoon occupied almoſt the whole ſkin, but particularly the palms of the hands, ſo that ſhe could not ſleep by reaſon of the very troubleſome itching.

As I ſaw very ſmall veſicles in theſe parts, which were full of water, ſuch as thoſe generally are wherein theſe animalcules harbour; I order'd the maid-ſervants to open one or two of them with a ſmall needle, in a very clear light; and if they could take out any thing, after preſſing out the water, to ſhew it to me, as I intended to examine it by looking through very good glaſſes which happen'd to be at hand. You aſk me the event of my reſearches. There was no need to examine for a long time. The animalcule was alive; and of that very form which the more modern authors had delineated.

I then took away another, and ſtill another: they were all alive, and of the ſame form. As none of the women who waited upon this lady were, in the leaſt, affected with a ſcabies; any phyſician who had liv'd before Redi and Malpighi, would not have doubted but theſe animalcules had taken their origin from putrefaction: on the other hand, it was not at all doubtful with me, but ſome one of the maid-ſervants had, without her own knowledge, brought one home to her miſtreſs adhering to her clothes; and that this had brought forth others; and theſe ſtill others, in a ſhort time; in conſequence of their being extremely fruitful.

Nor do I confeſs this only. But if you would chuſe to ſuppoſe, that the ſame thing which happen'd to this matron, happens to all thoſe that are affected with a ſcabies, and that this one cauſe is always the efficient cauſe when a ſcabies is produc'd; I myſelf, indeed, will not readily believe it, but will ſuffer it to be believ'd by you a little while, till I, nevertheleſs, ſhew that it is by no means ſafe to cure a ſcabies, which has ariſen even in this manner, by an external cure only, and neglect the internal: unleſs, perhaps, in a body, as is ſaid above, which was before in good health, and very lately infected by the contagion.

For what, I beſeech you, is a ſcabies, from what cauſe ſoever it may have ariſen, but ſmall ulcers, which, if they were join'd in one, would very often be equal to the largeſt ulcer? And what phyſician ſuffers an ulcer, I do not ſay a very large one, but even a ſmall one; whether ſpontaneouſly form'd, or by the application of a cautery, or any other external cauſe; to be ſhut up after it has remain'd open for a long time, without firſt applying a curative regimen to the conſtitution?

Yet why this? Why, becauſe by theſe emiſſaries the body had been long us'd to throw out any thing of a deprav'd, or at leaſt of a redundant humour, which it had within it. And why ſhould we not attend to the ſame thing, in the ſmall ulcers of a ſcabies of long ſtanding? for as all of theſe are nearly the ſame thing with a very large ulcer, it is the leſs ſafe to cure them,

without

without internal remedies, in proportion as they diſcharg'd the more deprav'd humour from without the body; and in proportion as they ſent back into the body the more of the ſame kind of humour, ſtill more deprav'd in theſe little ulcers themſelves, both by ſtagnation, and by the external air.

For that excellent archiater Senac (*y*) ſhews, with his uſual perſpicuity, that pus flowing back from external ulcers into the blood, may not only be injurious, in an equal degree with that which is carried into the circulation from internal ulcers; but may be even ſtill more deſtructive to the vital organs, by reaſon that this has a communication with the external air, which the other has not. Yet I ſhould never ſuppoſe it to have been more injurious to the vital organs, than when it was the cauſe of the internal ſurface of the pericardium, and the external ſurface of the heart, and of almoſt all the parts which are contain'd in the heart, being render'd ſcabious, in a boy who had an external ſcabies; I ſay, really ſcabious; for the accurate author of this very rare obſervation, Buddeus (*z*), found, by the judgment of his eyes, both when naked and furniſh'd with glaſſes, that the puſtules, which were in theſe parts, were perfectly the ſame with thoſe on the ſkin: and this not only appear'd evident to him, but to all that were then preſent.

Yet the external ſurface of the body was cover'd over with a ſcabies univerſally; what if it had been repell'd? You ſee, then, of how much importance it is not to drive back a diſorder of this kind: and that they do not talk altogether idly, who deny that a ſcabies is always a diſeaſe of the ſkin alone, and conſequently that remedies are to be applied to the ſkin alone; neglecting the cure of the remaining part of the body: and not only, if this be neglected; but attempted in ſuch a manner as to diſturb the motion of nature, when verging to the ſkin; ſometimes death, and at other times various diſorders, are the conſequences.

Read, in the ſixth volume of the *Actæ Naturæ Cur.* the ſixteenth obſervation, which is that of the celebrated Carlius. And ſuppoſe theſe things to be ſaid, by me, to ſhew you how much prudence is requir'd in phyſicians, who take upon them to cure ſcabious perſons; and how much it behoves them to apply themſelves in order, and with propriety, to the cure of the ſeveral diſorders, either of the primæ viæ, or of the obſtructed viſcera; whether theſe diſorders ariſe from the quantity of humours, or from any other depravity whatever. And among theſe laſt-mention'd diſorders, we muſt never forget that which, as long as it ſubſiſts, requires a ſcabies by way of a kind of chronic criſis.

You will find examples of this kind from the obſervation of the celebrated Carlius (*a*), whom I have commended: both in a man who; having driven away from the nape of the neck, by means of a certain liniment, a ſcabious efflorеſcence, which often recurr'd; fell into epileptic convulſions, which were remov'd by the return of that efflorеſcence: and in another man, and in a certain woman alſo, in whom an efflorеſcence of this kind (which had for a long time affected the hands) being dried up, he foretold that a fever

(*y*) Traité du Coeur, l. 4. ch. 3. n. 6.

(*z*) Commerc. Litterar. A. 1745. Hebd. 42. n. 1.

(*a*) In fine.

was at hand; and foretold the termination of the fever, when the efflorescence return'd.

And yet it occupied only a small part of the body, and had, in neither of these two, been repell'd by any external remedy. What then? where the scabies occupies the whole circumference of the body, and not only vanishes of itself, as in a person of whom Lanzonus speaks (*b*), who had been always scabious from his birth; but is even driven back by a sulphurated ointment, or any thing else of that kind, as in him of whom Apinus (*c*) gives the relation; and in those young men spoken of by Jo. Sebast. Albrechtus (*d*)? is it to be wonder'd at, if a malignant fever, or other considerable disorders, and particularly an asthma, come on, which cannot be subdu'd, but by the return of the scabies, either spontaneously produc'd, or by the help of proper remedies?

Thus the cause of the disorders is shewn by the very cure: that is, it is shewn to have consisted in that deprav'd matter, which, as it is injurious when retain'd internally, so when it is again discharg'd from the blood, frees us from the disorder. To this question belong the observations of our Rammazzini (*e*), made upon many persons, who, having repell'd a scabies by unctions, were afterwards seiz'd with a fever, during which they discharg'd black and fuliginous urine; yet the same persons, after the scabies had been, by the help of remedies, brought back to the skin, excreted urine like that of persons in health: and when this disorder was again repell'd, or broke out again, they shew'd this reciprocal change in the urine.

For which reason, that very cautious physician, particularly following the examples of Hippocrates, and the opinion of Ballonius, which I have produc'd above, conceiv'd that the scabies is not always a disease of the skin alone, and consequently thought (*f*), that "to drive it away by topical re-"medies alone," always, and without distinction, "was an attempt full of "danger." To Rammazzini add another very experienc'd physician; I mean Hoffman (*g*); who "places external remedies as the last in order," in a disease of this kind; and would previously "correct, by means of proper "internal remedies, the viscid, acrid, and corrupted mass of blood and "humours." For he was wont to find the blood, when taken away in diseases of this kind, "so viscid and condens'd into a coagulum, as it were, "that it was difficult to divide it."

8. But you will say, that the urine is not always black in case of a repell'd scabies: nor do we see this kind of blood always in scabious persons; and you even object to me my own observations, that I have written to you heretofore (*h*): as if, in fact, I had observ'd the blood to be in a very good state, in persons affected with a scabies; and not to be differently affected in other persons; or, as if, though there are various kinds of scabies, there could not be various disorders of the blood, or various degrees of disorder;

(*b*) Eph. N. C. Dec. 3. A. 3. Obs. 31.
(*c*) Dec. ead. A. 5, & 6. Obs. 117.
(*d*) Commerc. Litter. A. 1742. Hebd. 5. n. 1. M. Mart. & A. 1743. Hebd. 14. n. 1. M. Febr.
(*e*) Constit. Epid. Urb. A. 1691. n. 32.
(*f*) Ibid. n. 28.
(*g*) C. 5. supra ad n. 6. cit. in meth. med. § 15. & in thes. patholog. § 19.
(*h*) Epist. 49. n. 23.

or, what I would wiſh you principally to attend to, as if I had undertaken to prove any thing elſe to you than this, that it is by no means ſafe to neglect methods of internal cure, and to drive away a ſcabies which is not recent by external remedies alone.

And certainly, as in many perſons affected with a ſcabies, the whole of the diſorder is not in the ſkin, as the obſervations, made by me and by others, teſtify; how could it be ſafe to apply a cure to the ſkin promiſcuouſly, in all perſons, and neglect the internal parts? a purgation of which, if not in all perſons, at leaſt in thoſe whoſe natural emunctories are not equally open, was made in part by the ulcerated ſkin, or at leaſt might have been made.

What can be ſaid to theſe things? Why this I ſuppoſe, that phyſicians are not wanting, who teſtify, on the other hand, that what we deny to be ſafe, had always ſucceeded well with them, promiſcuouſly, in any ſcabious patient whatever; and without any detriment being the conſequence thereof. But as we do not call their obſervations in queſtion; ſo we think it but juſt that they, in return, ſhould not call into queſtion our obſervations, and thoſe of the great number of other phyſicians that I have referr'd to above (*i*).

To which you will add other obſervations of Hoffman (*k*), and of other phyſicians, who are quoted by him (*l*). By theſe, and others, that I deſignedly paſs over, it is made evident, how many and how violent diſorders have been the conſequence of a ſcabies being thus repell'd: and of courſe, it is certain what it is moſt ſafe to determine, in regard to that method of cure which has, at one time, one event, and at another time, another.

9. But as ſulphur is made uſe of, among other things, againſt a ſcabies, we will add ſome things, in particular, in reſpect to this remedy. This remedy is applied externally in unguents, lotions, and even in the clothes we wear; either by the fumes thereof, as I have ſaid above (*m*), being applied thereto, or rather by medicating them with a decoction thereof, and afterwards drying them in the ſun, or at the fire, which Willis (*n*) recommends as the more eaſy, and much more elegant method; although I am in doubt, whether it is quite "without any diſagreeable ſmell," as he aſſerts.

But, internally, it is us'd in one way by the phyſicians, and in another way by the common-people.

And as, in regard to the external uſe, which is at one time to be commended, and at another diſapprov'd, we have already ſpoken ſufficiently; now hear the manner in which the common-people make uſe of ſulphur againſt the ſcabies, and what inconveniencies and injuries ſometimes happen therefrom. They take ſulphur beaten into a powder, throw it into any wine but red wine, and drink it together with the wine.

And I knew a young woman, who, having taken ſome in this manner, ſoon after felt ſo great a diſturbance in her head, that ſhe ſeem'd then to herſelf to be almoſt mad; I ſuppoſe, in conſequence of the irritation of the ſtomach being immediately propagated to the brain, in the ſame manner that Boerhaave (*o*) did not doubt but opium acted, even while it is as yet in the

(*i*) N. 2. 3. 7.
(*k*) § 15. ſupra ad n. 7. cit.
(*l*) In theſ. pathol. ibid. cit. § 18.
(*m*) N 3.
(*n*) Pharmac. Rat. S. 3. c. 6.
(*o*) Prælect. ad Inſtit. § 857.

ſtomach,

ſtomach, and did not need that long paſſage through the chyliferous ducts; for having open'd a dog, that was now almoſt in convulſions from the effects of opium, which he had ſwallow'd, he had found the opium ſtill in the ſtomach. Be this as it will; that ſulphur acts on the ſtomach itſelf, you will learn or ſuſpect from one of the obſervations which I ſhall immediately add here, if not from both of them.

10. A woman, of forty years of age, who was addicted to the uſe of wine and tobacco, more than became a woman, and had been married, to a porter that was a robuſt man, but had never borne children, having drunk ſulphur in wine, more than once, in order to drive away a ſcabies, which ſhe had contracted, and laſt of all in a much larger quantity; began, ſoon after, to be very much diſorder'd, vomited ſeveral times, and came thereupon to the hoſpital: being already troubled with a fever, her pulſe being hard and contracted, and ſhe complaining of a great ſtreightneſs in breathing.

For this reaſon freſh-drawn oil of almonds was given, and blood was taken away. The day after, her reſpiration being ſtill more confin'd, blood was again taken away: and it was like that of the day before, of a firm and denſe craſſamentum, but cover'd over with no cruſt. When the cauſe of the diſeaſe was heard, two glaſſes of milk were alſo given. But the difficulty of breathing being encreas'd, the patient being troubled with evident convulſions of the limbs, and the pulſe growing more languid, ſhe died, ſo as to put an end to her diſorder within about four days, after the beginning thereof.

The diſſection of the body was perform'd, not only with a view to find out the cauſe of the diſorder, but alſo to inſtruct the ſtudents in anatomy; for it was almoſt the latter end of November, in the year 1744: and the diſſection was perform'd in the hoſpital, thirty hours after the time of the patient's death.

The body had a good appearance; except that the ſkin was here and there deform'd with a ſmall ſcabies. The abdomen, however, was tumid: and this not from too much fat; for as the fat was very well-condition'd, ſo it was in a very proper quantity: nor yet was this tumid ſtate of the abdomen owing to the extravaſation of a great quantity of water into the belly; for although a conſiderable quantity of this fluid was there, it nevertheleſs did not appear to be out of the pelvis.

But the ſtomach, the ſmall inteſtines, and the colon, for a conſiderable extent; for in other places it either preſerv'd its natural latitude, or was very much contracted, which we obſerv'd more on the left ſide, near to the ſtomach; being, themſelves, diſtended with air, had diſtended the abdomen. The omentum cover'd no inteſtines, by reaſon of its being forc'd, or drawn upwards; for this part, and that upper part of the meſocolon, which ſupports the tranſverſe arch of the colon, were rigid, and diſtinguiſh'd, here and there, with red ſpots; but particularly on the back part.

On the external ſurface of the ſtomach, the blood-veſſels were pretty turgid. And the internal ſurface, where the fundus came very near to the antrum pylori, ſhow'd an area of a circular form, the diameter of which was about four fingers breadths. This area was diſtinguiſh'd, from the remaining ſurface of the ſtomach, by theſe circumſtances, that it was leſs ſmooth, and leſs ſhining, conſiderably more white, and furniſh'd with veſſels that were

black, as if from injection; whereas, in other places, a ſmoothneſs, a brightneſs, a leſs white colour, were every where ſeen; but ſcarcely any veſſels; not to ſay that they were not render'd conſpicuous in the ſame manner, or of a black colour: ſo that it was evident to every one, that, as far as this whole area extended itſelf, ſo much of the internal lamella of the ſtomach had been eroded.

Nor beſides this, not even in the neighbouring œſophagus, or inteſtines, could I obſerve any thing which ſignified eroſion, or inflammation. As this ſtomach was bigger than the ſtomach naturally is, ſo it was without any rugæ, and had its parietes very thin: and ſcarcely did it retain any traces of the ring of the pylorus. The latter of which appearances, if not the effect of original formation, or from ſome other more ancient cauſe, might, together with the others, be owing to the frequent diſtentions of this viſcus, in a drunken woman; and particularly to its late diſtention, from included air. The other circumſtances of diſeaſe that I obſerv'd in the belly, are briefly theſe. The gall-bladder was conſiderably ſhrunk, and contain'd but little bile. The kidnies were lax. The great artery was very narrow.

I then inſpected and diſſected the genital parts with accuracy, as the woman had been barren. The teſtes were ſmall and contracted, even more than they are wont to be at that age. From the left was univerſally prominent an hydatid of the bigneſs of a ſmall grape. The uterus was inclin'd to the right ſide, and had its fundus rather ſmall: for which reaſon the thickneſs of the cervix,, that was greater than it ought to be, and eſpecially at the lower part, was more worthy of remark; as that of the corona itſelf, with which the oſculum uteri is circumſcrib'd, was alſo: for the oſculum was here ſmall, as it is in virgins, and of a circular form.

From this orifice diſtill'd a humour like milk in its colour, and not more fluid than this, nor of a bad ſmell; yet in a quantity which was very conſiderable: ſo that the woman ſeem'd to have labour'd under a uterine fluor. And that the ſource of this diſcharge was higher up than the lower part of the cervix, was ſhewn by the diſſection of this part. For there the veſicles of the cervix contain'd a mucus, which ſeem'd to be more fluid, and yet not milky. Above there appear'd none even upon diſſection. About the middle of the length of the cervix, I found, in two places, by cutting deeply within the thickneſs of the parietes, an empty roundiſh cellule, capable of containing a ſmall pea, and without any ſigns of eroſion, either there or in any other place.

Upon opening the thorax, I found, very evidently, what I had before ſuſpected, from the vertebræ of the loins beginning to be bent ſlightly to the left ſide, that the woman was gibbous; for the vertebræ of the thorax were much more bent to the right ſide. But if the caſe had been different, or if the uterus, which I ſaid was inclin'd to the right ſide, had been, like the vertebræ of the loins, inclin'd to the left ſide; I ſhould have added this woman to the others whom I have already ſpoken to you of (*p*), when writing of the inclination of the uterus. But the inclination of the ſpine, at the

(*p*) Epiſt. 48. n. 33.

lower

lower part, was here very ſlight; and ſuch as the oſſa innominata would not eaſily follow, as they did in thoſe ſubjects.

However, I found no water extravaſated in the thorax, or pericardium, as I did in the belly. The lungs, anteriorly and laterally, were connected very cloſely with the pleura: they were tumid beſides, and eſpecially the left lobe, but only from the air, and a fluid that was mix'd therewith; for they were in no part hard, or more red than was natural. The ventricles of the heart contain'd a coagulated blood: and that blood was black, as it was in other places alſo.

Upon opening the cranium, all the parts which were within it, ſeem'd to be conſiderably more lax than they ought to have been, on the eighth day after death; for ſo many days had the accurate diſſection of the other parts taken up. The veſſels that go through the dura mater were turgid with blood; and in the plexus choroides I obſerv'd veſicles full of water, in great number, and not very ſmall. Finally, all the parts that were within the cranium being taken away, thoſe ſurfaces of both the petrous proceſſes, which look one upon another, and the neighbourhood thereof, were ſeen to be not ſmooth, but unequal.

11. A porter, the huſband of the woman I juſt now ſpoke of, of a tall ſtature, and, although of a ſomewhat pallid face, and a habit of body inclining to leanneſs, robuſt nevertheleſs; being almoſt of the ſame age with herſelf, and equally given to drinking, was affected with the ſame ſcabies, and made uſe of the ſame remedy as ſhe: but I believe not in the ſame quantity. After her death he continu'd in pretty good health, to all appearance, for almoſt ſix months; at the end of which he was ſeiz'd with a fever that ſeem'd to be ſlight, but was, in effect, ſo fatal, that he lay in the hoſpital but two days before he died: and this was about the middle of May.

On the firſt day, the pulſe and the other ſymptoms were not very bad; if they had not been render'd ſuſpected by a kind of anxiety and inquietude. On that day, as is generally practis'd with moſt others in the beginning, a medicine was given to cleanſe the ſtomach and bowels, with gentleneſs. On the day following, all thoſe evils, which I ſhall relate to you, came on; ſo that remembering how his wife was, they gave him milk. For he vomited: he was troubled with the ſame ſtreightneſs of reſpiration that his wife was formerly: he was convuls'd in his whole body: he was, moreover, violently delirious: and in his delirium cried out that his belly was on fire. And in this manner his life was finiſh'd, before the third day after his coming into the hoſpital.

On account of this ſhortneſs of the diſeaſe, it happen'd that the body was diſſected before I knew of the man's being ſick; which was a circumſtance that was very far from being pleaſing to me. Yet the body was diſſected by a very attentive and intelligent pupil of mine, who is now deſervedly an eminent phyſician at Feltri; I mean, Anthony Guilermi: and from him I receiv'd the following account.

The belly being open'd, in the omentum, and the pinguedinous appendiculæ of the inteſtine colon, and particularly in thoſe that were near the ſpleen, as alſo in the adipoſe membrane, as it is call'd, of the left kidney,

the fat, which was not in great quantities, was of a brown colour and ſomewhat livid. And as to the colon itſelf, it was three times more wide than uſual. The ſtomach was contracted, of a brown colour externally, and internally inflam'd, without any eroſion, to the breadth of the palm of a man's hand, where it was turn'd towards the ſpleen. The lower edge of the liver was livid, and of a blackiſh colour; yet not to a very great depth.

Upon opening the thorax, the lungs and the heart, as well as the diaphragm, which was examin'd on both ſurfaces, were found to be in a natural ſtate. In the ventricles of the heart were ſmall polypous concretions. The head was not diſſected.

12. I enquir'd whether the ſkin had retain'd any thing of the ſcabies, and, in like manner, whether the man, after drinking the wine and ſulphur with his wife, had taken any more. To both of which enquiries I was anſwer'd in the negative. This, however, was added, that the wine which both of them had made uſe of, was kept in a brazen veſſel. On hearing of which, as I did not doubt but this very pernicious diſorder was an inflammatory fever, ſo I ſaw that it might be doubted whether the ſcabies, which, indeed, had been repell'd, without any proper method of internal cure, had left ſuch particles in the blood, as were, in ſome meaſure, the cauſe of this very great injury; and, in like manner, as the ſtomach was the ſeat of this inflammation, whether this did not happen the more eaſily, becauſe it had been already ſomewhat weaken'd by the drinking of that wine. At leaſt, you have read what injury the ſtomach of his wife receiv'd therefrom; whether this aroſe, in part, from the noxious quality of the braſs veſſel wherein it had been kept, or only from the ſulphur that had been mix'd with it.

For how injurious ſulphur may be, the ancient phyſicians had formerly known, from whom Pliny (*q*), took this dogma, that aſſes milk was uſeful "againſt gypſum, ceruſſe, ſulphur, and quick-ſilver;" notwithſtanding Dalechampius (*r*), is needleſsly afraid, leſt, though they had perhaps written θρύον, that is the *ſolanum manicon*, Pliny had read improperly θεῖον, that is ſulphur; for it is not probable, that among thoſe things which Pliny ſpeaks of, as belonging to the mineral kingdom, as it is call'd, a vegetable ſhould have been interpos'd in that paſſage which Pliny has copied: nor is the difference of the writing ſo inconſiderable, as eaſily to deceive the eyes of a perſon who copied the paſſage.

But even Galen has plac'd ſulphur among thoſe things (*s*) that "create "ulcers in the parts to which they long adhere:" and Haly Abbas, whom Ardoynus (*t*) commends and follows, has ſaid, that a man who drank ſulphur "had a cutting, burning, excruciating pain in his ſtomach, and ulcers in the "inteſtines." Yet I would not have you believe, that I attribute this deſtructive power to every kind, to every preparation, to every mixture, and to every doſe of ſulphur: for I am by no means ignorant that ſulphur has been commonly given againſt the ſcabies, not only by the modern phyſicians, but ſometimes alſo by the ancient phyſicians.

(*q*) Nat. Hiſt. l. 28. c. 9.
(*r*) In Adnot. ad eum locum.
(*s*) De compoſ. medic. l. 6. c. 2.
(*t*) De Venen. l. 2. c. 15.

But

But it is certain that the woman, of whom we ſpeak, had taken it in wine which had been preſerv'd in a brazen veſſel, and in too great a quantity: but whether ſhe took it in a pure, or an impure ſtate, is by no means certain.

I would have you examine thoſe authors who have admoniſh'd us what may be mix'd with it in the very mines from whence it is dug; or, at leaſt, what Waltherus (*u*) has briefly hinted, when he ſays, that "we muſt examine "whether the mines, which ſupply the *ſulphur vivum*, do not produce, to- "gether with the ſulphur, minerals that are in other reſpects hurtful: and "that we ought to be particularly afraid of arſenic being join'd with many "ſpecies of ſulphur: for thus he had known, that, from a ſcruple of crude "ſulphur being taken into the ſtomach, a vomiting, tormina, and teneſmus "had been excited: and, indeed, although the ſulphur had been frequently "boil'd in water, and diſſolv'd over a gentle fire; yet, in many perſons, ſtools "had not ſo much been the conſequence of taking it, as tormina."

And as to that with which arſenic is join'd, this certainly ought not to be applied externally to the ulcers of ſcabious perſons, as appears from the effects of cobalt; which as the celebrated Jo. Adr. Sproegelius (*x*) juſtly affirms "to be of the ſame nature with arſenic," ſo he relates that this metal, being ſprinkl'd upon the head of a ſcabious girl, had brought on a very miſerable death within a few hours; and that the ſame thing had happen'd, not only to a ſcabious dog, from cobalt, but to three others, in which he had made a ſlight inciſion of the ſkin, and applied arſenic by ſprinkling: and he adds, that even greater marks of diſeaſe were found by diſſection, than if he had given them ſo much arſenic by way of the mouth.

However, to the caſe of that girl you will add a ſimilar one in another girl, who was affected with a *phthiriaſis*, or louſineſs, of the head, as related by Harderus (*y*); and to the experiments, thoſe examples which Etmuller the ſon (*z*) has produc'd from Fabricius Hildanus, Janus Antonius Saracenus, Amatus Luſitanus, and others; that is to ſay, of death, or of the moſt violent ſymptoms, being brought on from the application of an ointment, wherewith arſenic was join'd, to ulcers; and even to the ſcabies itſelf.

And to this ſubject, alſo, probably belongs that more ancient obſervation of Baccius (*a*), of arſenic being ſprinkl'd upon a phagedenic bubo; to which inſperſion death ſucceeded, after three days, by ſuch violent vomitings of an æruginous humour, that a ſuſpicion aroſe of ſublimated mercury having been privately given.

But there is no doubt of the late obſervations of that very experienc'd ſurgeon Goulard (*b*), being relative to this queſtion, as they agree with others which he refers to from Morand; obſervations, for inſtance, of acrid and eroding medicines being applied to the fungous fleſh of ulcers, and

(*u*) Progr. de Sulph. & Mart.
(*x*) Experim. circa varia venena, &c. § 28. & Exp. 36.
(*y*) Sepulch. in Additam. ad Sect. 11. l. hujus 4 Obſ. 13. Hiſt. 13.
(*z*) Eph. N. C. Cent. 3, & 4. Obſ. 127. in Schol.
(*a*) De Venenis, &c. ubi de Venen. quæ extrinſecus, &c.
(*b*) Memoire ſur les Maladies de l'Uretre.

having their ſmall particles taken into the blood, in ſuch a manner, that the patient died with all the ſymptoms of poiſon; though in the mean while no-body ſuſpects the true cauſe of his death. And if you conſider all theſe things maturely, you will alſo gather from thence, how eaſily the particles of eroſive matter, that is proper to ſcabious perſons, may be carried from their little ulcers into the circulating fluid.

But, before I make an end of writing upon the ſubject of the ſcabies, you will, perhaps, aſk, why I never made mention of the ſebaceous glands of the ſkin, and of the matter ſecreted therefrom? When the queſtion was of *Sirones* (*c*), I thought it ſuperfluous to put you in mind, that a certain appearance of worms muſt not be confounded therewith, as was formerly done; ſince in this preſent ſtate of anatomical knowledge, to the increaſe of which I have labour'd with all my little abilities, I ſee that it is aſſerted, even by tyros in medical knowledge, "that the worms which infeſt the ſkin "of children, are nothing more than a deceitful appearance; and are, in "fact, filaments preſs'd out from the ſebaceous follicles of the ſkin, as is "ſufficiently and clearly determin'd."

And, indeed, I have heard that, as there is an endemic diſorder in Finland, which they call *Breſt*, and which makes great havock among children, conſiſting in very ſmall tubercles of the whole ſkin, that are extenuated into a kind of worms; I have now heard, I ſay, that this diſorder is accounted for, by learned men, from an obſtruction of the ſebaceous glands of the ſkin: perhaps, becauſe the matter, ſecreted by theſe glands, being in a very thick and tenacious ſtate, is, for that reaſon, while it comes out in a very ſlow manner, form'd into filaments, which not only retard the diſcharge of the matter that ought to be excreted in ſucceſſion; but alſo prevent the very neceſſary diſcharge of inſenſible perſpiration, by compelling the matter, that lies obſtructed in theſe follicles, to preſs upon the neighbouring ſanguiferous veſſels all round.

You ſee then, why, in ſpeaking of the *ſirones*, I thought it unneceſſary to take any farther notice of the ſebaceous matter: perhaps this might have been done with more propriety in other places. For as the ſecretion of this oleoſe matter ſeems to be intended not only for other uſes, but particularly to keep the ſkin ſoft and flexible, and to defend it againſt the effect of eroding bodies; it follows, that where this ſecretion is either prevented, or deprav'd, thoſe diſorders muſt eaſily ariſe which are obſerv'd in cutaneous infections.

Thus in the elephantiaſis, as ſome underſtand this word, the ſkin becomes rigid and inflexible: although this happens ſometimes even without an elephantiaſis, as it did formerly in a woman whom Jo. Fred. Helvetius, as you have it in Stalpart (*d*), cur'd within the ſpace of three weeks; and in another deſcrib'd by Diemerbroeck (*e*); for another I ſuppoſe it to be, when I compare the deſcriptions together: and, finally, in that Neapolitan woman whoſe diſeaſe and cure are deſcrib'd, as you know, by Charles Curti (*f*).

(*c*) N. 4.
(*d*) Cent. Poſt. P. 1. Obſ. 43.
(*e*) Anat. l. 8. c. 1.
(*f*) Diſcuſſ. d'un raro morbo cutaneo.

As

As to what relates to eroſion, however, it is natural to ſuppoſe that this happens much more eaſily in thoſe in whom the ſcabies does not come by contagion; but ariſes from the eroding corpuſcles, which are ſo redundant in the blood, that even by infecting the ſebaceous matter, they not only render it unfit to defend the ſkin, by its unction, from the irritating ſalts of the ſweat; but, on the contrary, render it very fit to irritate and erode.

Why then, you will ſay, have you not hinted at theſe things above? Why, in fact, I did not touch upon this ſubject, leſt I ſhould either ſeem to ſet more lightly by ſome celebrated men than I ought, or ſhould ſeem to challenge them; if I either entirely neglected, or undertook to diſcuſs, thoſe things which they advanc'd ſome years before, of the ſebaceous glands, and of the matter ſecreted therefrom.

For ſuch a diſcuſſion, moreover, this is not a convenient place; as it would give occaſion to a long diſcourſe, that would be diſagreeable to you; and ſtill more to myſelf, by reaſon of the repetition of thoſe things which I have ſaid ſufficiently at large above: and that would be frequently neceſſary. Both of which circumſtances you will naturally conjecture, from the few things that I ſhall briefly point out. There are ſebaceous glands, ſay they, "in "the trachea, in the alimentary canal, &c." But do you read the thirteenth animadverſion of the fourth of the *Adverſaria*.

They could "never find" ſebaceous glands ſcatter'd up and down, in the ſkin. Do you, however, examine numbers three and four, in the third of the *Epiſtolæ Anatomicæ*.

Yet they have ſeen "on the ſkin of the face, the breaſt, and the arms, "of ſome men, ſmall black points;" and not only theſe little points, but have ſeen "an unctuous matter, reſembling a round worm, preſs'd out "therefrom:" and they therefore ſay, that there are, "in the ſkin, certain "very ſmall cavities, which are found to be larger than their orifice;" but they contend, that theſe things which they have ſeen "are not preſent in a ſound ſtate."

You muſt, therefore, look again to thoſe paſſages which I have pointed out in my writings, and others: or, rather, you muſt examine the alæ naſi in moſt men, and in thoſe that are ſound and healthy too. What then do they ſay theſe cavities are? *A ſheath*, which before embrac'd the root of a hair that is now deſtroy'd. And here it becomes neceſſary for you to read number twelve of the firſt of the *Adverſaria* (*g*), and the thirty-third animadverſion (*h*) of the fourth of the *Adverſaria*; for in the former paſſage, I firſt hinted a doubt againſt the ſebaceous glands, from the receptacles of the hairs; and, in both places, I have not ſpar'd to mention ſome things that are contrary thereto, or at leaſt that limit its extent: to which you may now add, that thoſe cavities would not have been the largeſt in the alæ naſi; that is to ſay, where the hairs were the ſmalleſt.

And that *vagina*, or *ſheath*, is fix'd in the fat, under the ſkin; for they think "that the opinion of Columbus is ſupported upon truth, to wit, that "all the hairs fix their roots in the fat." But neither has Columbus ſaid

(*g*) Verſus finem. (*h*) In fine.

all, nor have I ſaid *all*, when I firſt alſo produc'd his opinion; as you will learn from the fifth animadverſion of the ſecond of the *Adverſaria*.

For I not only knew that there are hairs, whereby we cannot ſhew that the whole thickneſs of the ſkin is pervaded; but I even ſaw that Columbus himſelf, among the others which are fix'd in the fat, had expreſsly excepted thoſe which are in the ſcrotum: and that to theſe, others ought to be added; as, for inſtance, thoſe that ariſe from the neighbouring integuments of the penis, and thoſe very ſlender ones that ariſe from the pinna of the external ear, and from the caruncula lachrymalis.

Do not, however, imagine, that thoſe ſheaths of the hairs, which are ſubſtituted in the place of the ſebaceous glands, are fix'd down in the fat for this reaſon, that they may take up an oleoſe matter from thence. From theſe ſheaths, indeed, a matter is ſaid to be diſcharg'd which is call'd ſebaceous; but at the ſame time it is ſaid not to be oleaginous, becauſe linen-rags, or lint, "plentifully moiſten'd" with this matter, "reſiſt the flames "for a very long time;" as if, truly, we denied that nothing beſides this, either of the matter of ſweat, or inſenſible perſpiration, adher'd to the linen; or, as if we had denied that this was any thing but pure oil: neither of which could ever come into my mind, as I every day ſee with how much eaſe the ſordes of the ſkin are waſh'd off with water.

We, therefore, believe it to be ſufficiently "of a ſaponaceous nature," not only by means of ſomewhat being mix'd therewith externally, but alſo internally; and yet not "as all the humours of our body are," but in a peculiar kind of manner: and from hence it happens, that if it be examin'd with the eye, and with the hand, immediately upon its being ſecreted from a ſound body, and the effects of it conſider'd, it is clearly perceiv'd how much it differs from the other humours.

And I would alſo have you transfer theſe things to that ſebaceous matter which is ſeparated, about the eyes, from the glands of the tarſi, and the neighbouring caruncle; for this is alſo mix'd with the lachrymal humour, that is conſtantly ſecreted. In which glands, and caruncle, and in the neighbourhood thereof, what my labour formerly did, I might ſay to ſome others, who have ſhewn, in deſcribing them two-and-twenty years ago, either that they are ignorant of the hiſtory of anatomy, or, if they know it, that they too openly diſſemble. But I do not think this worth ſo much notice: and I already ſeem, to you, to have forgotten that this, as I ſaid above, is not the proper place for diſcuſſions of ſuch a nature.

13. Let us go on, therefore, from the ſcabies, that is, from the ſmaller ulcers, to the larger. I never remember to have ſeen a larger than in a ruſtic man, who, when ſhut up in a ſtove, ſuffer'd, at firſt, from the unſkilfulneſs of a ſurgeon in applying too much heat; and, after that, by his obſtinacy in neglecting the complaints of the poor man, who cried out that he was burnt: for he did not take him out before he was half burnt in the whole outſide of his body.

Wherefore, although the ſkin only was externally ulcerated; yet the very ſize of the ulcer brought the man to the end of his life, by the moſt continual and incredible tortures: and that within the ſpace of two or three days, in the hoſpital of Incurables at Bologna; where they had carried him

ſoon after the accident. A caſe not far unlike this, you will read the deſcription of by Ledelius (*i*); but a juvenile age, a very ſpeedy cure, and not an equal ulceration in all parts of the ſkin, as appears from the difference of the pains, ſuffer'd a more happy event to the diſeaſe.

Mention is made of old ulcers, in the obſervations I have ſent to you, even more frequently than of the ſcabies. And two of theſe (*k*), particularly, confirm what I ſaid of the purgation which is made by the ſcabies (*l*). For when an ulcer, and a ſcabies, afflicted one perſon at the ſame time, the former began to be much more troubleſome, and painful, upon the vaniſhing of the latter; though the ſcabies was not moiſt, but dry. And, on the other hand, upon the cloſing up of ulcers, which appear'd from cicatrices on the tibiæ, ill-condition'd puſtules had occupied almoſt the whole ſkin.

As to what has been ſaid of the ſcabies, that it muſt not be driven away by external remedies merely, unleſs when it is recent and contracted by contagion; becauſe, otherwiſe, the diſcharge of noxious humours, which us'd to be thrown out thereby, would be by this means prevented, as well as the abſorption of thoſe humours which us'd to be carried inwards therefrom; the ſame may be, with juſtice, ſaid of other ulcers alſo, as appears from the remainder of our obſervations. For ulcers of long ſtanding, whether ſpontaneouſly or artificially growing dry, or ſhut up, have had the moſt violent diſorders follow them; particularly diſorders of the brain, and ſometimes of the heart: and even then, and when ulcers, although not yet ſhut up, had been long troubleſome, you may obſerve almoſt always, that there was ſerum within the cranium, ſometimes alſo within the vertebræ, or within the thorax and belly.

And, rather than repeat theſe obſervations here, I chuſe to refer you to the letters, in which you may read moſt of them over again; that is to ſay, the fourth (*m*), the fifth (*n*), the twelfth (*o*), the twenty-fifth (*p*), the twenty-ſeventh (*q*), the forty-ſeventh (*r*), and the fifty-ſecond (*s*).

14. But beſides theſe that belong to the tibiæ, we have often deſcrib'd, in our obſervations, other ulcers alſo; as, for inſtance, at one time, in the obſervations that relate to the ſinuſſes of abſceſſes, and to the ſubjected caries; and, at another time, in thoſe that relate to ulcerated tumours and gangrene. However, I have not leiſure here to point out all the places of theſe obſervations in particular. I chuſe rather to ſubjoin ſome, which are referr'd to the two above-mention'd heads, omitting the others which I ſee are, with leſs propriety, referr'd to this ſubject; as, for inſtance, when in this ſection of the Sepulchretum (*t*), among the ulcers, is produc'd the caſe of a fœtus of ſeven months, that was without a brain: which caſe you may compare with thoſe that I have taken notice of, as being thus born, from the obſervations of ourſelves and of others; and, as I think, in a place that is much more proper (*u*) for ſuch obſervations.

(*i*) Eph. N. C. Dec. 3. A. 5, & 6. Obſ. 51.
(*k*) Epiſt. 21. n. 30. & Epiſt. 4. n. 35.
(*l*) Supra, n. 8.
(*m*) N. 7. 13. 30.
(*n*) N. 15.
(*o*) N. 2.
(*p*) N. 12.
(*q*) N. 8.
(*r*) N. 4. 33.
(*s*) N. 30.
(*t*) Obſ. 1. § 3.
(*u*) Epiſt. 12. n. 5. & ſeqq. & Epiſt. 48. n. 48. & ſeqq.

In the firſt place, therefore, as to what relates to the former of theſe two heads, I mean to the ſinuſſes of abſceſſes, one of my cures of this kind particularly comes into my mind; and this I ſhall ſo much the more willingly relate here, as it was perform'd by means of that remedy, the peculiar efficacy of which againſt even minute ulcers; that is, againſt the ſcabies ſpoken of above; I ſee is now call'd in queſtion by ſome perſons: and in particular by a phyſician, in other reſpects very experienc'd.

Lodovico Albertini, arch-deacon of the church of Forli, an equally noble and pious old man, began, in the ſpring of the year 1711, to be troubled with a kind of *dyſuria*; and while they endeavour'd to mitigate this diſorder, by emollient and demulcent remedies, the left leg was firſt ſeiz'd with a pain, and after that with an abſceſs. As from this abſceſs, after being open'd, pus continued to flow for a very long time, in ſuch a quantity, every day, as might very eaſily carry off a man who was within one year of fourſcore; the phyſician thought proper, in order to prevent the progreſs of this diſorder, to give the decoction of woods, as it is call'd; and the ſurgeon, to apply ſuch things to the abſceſs, as ſhould tend to heal it up.

And now the very orifice of this abſceſs ſeem'd to be ſhut up; when, on a ſudden, a violent fever came on, which greatly affected the head, and began to bring on a delirium. Then blood was taken from the other foot, and the abſceſs was again open'd: and by this means, the fever was indeed put to flight; but from the abſceſs, ſo great a quantity of pus was again diſcharg'd, and continued to be diſcharg'd, that they deſpair'd of the patient's life; and not without reaſon. For I, being then call'd in, for the firſt time, ſaw that the patient, who had been before of a good habit of body, and robuſt, conſidering his age, was now nothing more than ſkin and bone, and very weak and languid: being never free from fever, and having every now-and-then the moſt excruciating pains in his leg, which diſcharg'd every day, from its abſceſs, ſuch a quantity of pus, as I could not eaſily have believ'd.

It appear'd to every one, that the patient could not poſſibly recover, unleſs his leg was healed. But how difficult it was to bring this about, all the hitherto uſeleſs endeavours of the phyſicians, as well as the care and pains of the ſurgeon, demonſtrated: and to theſe things was added, the advanc'd age of the patient, the very hot ſeaſon of the year; for the middle of ſummer had in the mean while come on; and, what was worſe than all the other circumſtances, a ſtomach quite tired out with remedies.

Two remedies, nevertheleſs, ſtill remained untried: the firſt of which, I mean broth made from the land-tortoiſe, his ſenior phyſician recommended; and the laſt, that is the *pulvis viperinus*, another old phyſician, whom they had ſent for from another place ſome days before, had propos'd, when he quitted the patient. My opinion being ask'd in regard to both theſe remedies, I did not diſapprove the firſt, if the ſtomach would bear it: but that it might be the more eaſily borne, and might be of more uſe, I ſaid that a greater part of the ſecond ſhould be added, yet in that particular manner which I was about to mention; and that our chief confidence muſt be placed in this.

I meant

I meant by this to ſay, that what remains in the *pulvis viperinus* does not ſeem to be of ſo much advantage as the freſh viper itſelf, if a quantity of the fleſh of this animal were boil'd in thin veal broth, with an equal quantity of the fleſh of the tortoiſe; and the ſame fleſh of the viper that had been boil'd, were beaten up with old *ſaccharum roſatum*, as it is call'd, and were eaten every day in the morning, drinking after it the broth, of which I have been ſpeaking: and to theſe I ſaid might be added, betwixt dinner and ſupper, an emulſion, as it is call'd, of freſh almonds; adding a little ſugar, wherewith coral, finely levigated, was mix'd.

The phyſician was ſo far from being diſpleas'd with this propoſal, that, as he was pretty far advanc'd in life, and his health impair'd, he begg'd of me, in conjunction with the patient and his relations, that I would ſee to the execution of the plan I had propos'd. I look'd to it therefore; and, by the bleſſing of the Almighty, the pains of the legs began to be diminiſh'd gradually, and the diſcharge of the pus to be leſſen'd to ſuch a degree, that on the fortieth day from the time of beginning this method, the abſceſs was almoſt tending to cicatrization.

And although the fever had now long been taken off, and the weakneſs and emaciated ſtate of bodyhad decreas'd; yet, in order to confirm, and encreaſe theſe advantages, I continued, in compliance with the ſpontaneous entreaties of the patient, and not merely by his conſent, to make uſe of the ſame method of cure ten days longer. At the end of which period the patient, who had been confin'd to his bed from the latter end of April to quite the middle of September, began to riſe; and recovering his health and ſtrength more and more every day after that, not only recover'd his former habit of body, but ſhow'd me that very leg, from whence ſo great a quantity of pus had flow'd for ſo long a time; and from whence ſo many oblong pieces of membranes had come away, together with the pus; differing nothing at all, either in point of nouriſhment or ſtrength, from the other, when I happen'd to meet him in the beginning of December: and he liv'd ſome years afterwards in very good health; till at length he was carried off, in an extreme old age, when I liv'd at Padua.

15. I was impell'd, by more than one reaſon, to relate this cure to you thus fully. For there are ſome who aſcribe to vipers, properties which they have not; as, for inſtance, ſo great a power of warming and drying, as to create an inextinguiſhable thirſt, and to diſſipate thoſe few ſpirits that old men have remaining: for which reaſon Claudinus admoniſh'd (*x*), that the uſe of them ſhould be forbid to perſons far advanc'd in age; and eſpecially in the ſummer-time, and in a warm region.

Redi (*y*) indeed has obſerv'd, that no thirſt was excited in an old man, or in young men, by a much larger uſe of the vipers; although it was ſometimes ſummer when the experiment was made. And as I have never obſerv'd any thirſt, or diſſipation of ſpirits, from the uſe of the vipers, even in this old man, at the moſt hot ſeaſon of the year, and in a country that is rather warm; nay, have even obſerv'd a revival of the ſtrength and ſpirits, and that nothing was dried, except what I wiſh'd to be dried up, that is, the abſceſs; ſo I

(*x*) Append. ad Tract. de Ingreſſ. ad Infirm. Sect. 6. (*y*) Oſſervaz. int. alla Vipera.

have, on the other hand, ſeen the body, in general, always recruited, inſtead of being dried up.

Others, on the contrary, ſay, that no more is to be expected from vipers, than " from the other dried parts of all animals, which are endow'd with a " kind of gelatinous, mildly ſulphureous, and vaporoſe juice." You perceive that theſe things were written in thoſe countries wherein there is not a plenty of freſh vipers. For which reaſon, I am not ſurpriz'd, that in theſe places " various medicines, prepar'd from vipers, have done nothing in an " atrophy, a conſumption, a ſcabies, and other diſorders of this kind;" or that it ſhould be ſaid, that " no ſolid advantage, at leaſt, which can make " it worth our while to try the experiment, can be expected from theſe re- " medies, in correcting the impurities of the blood." I do not, however, here ſpeak of dried vipers, or of remedies thus prepar'd, but of freſh vipers; for you have ſeen that I preferr'd the latter to the former; as it was in the caſe of an abſceſs, which to that time could not be heal'd: following the practice of an illuſtrious, and more ancient author, than thoſe whom they commend, I mean Antonius Muſa, who, as he liv'd in Italy, and was the phycian of Auguſtus, " when he happen'd to light on ulcers that had been " incurable, gave vipers to be eaten; and by this means cur'd them with a " ſurprizing celerity," as Pliny has deliver'd down in his writings (*z*).

For as to their adding, that " if any good was done by theſe medicines, " it was rather to be aſcrib'd to other ingredients that were mix'd therewith, " and to medicines given in conjunction therewith;" though this might be true of their preparations thereof, yet certainly of the vipers which Muſa gave to be eaten, I do not think you can ſuſpect any ſuch thing: as it appears, that they were eaten alone, and not mix'd with other remedies; nor yet of thoſe that were " prepar'd after the manner of fiſh," which a miſerable ſlave, who was cur'd by himſelf in this manner, had been order'd to feed upon, by that great phyſician among the Greeks, Craterus; from whom the very learned Mead conjectures (*a*) that Muſa had learn'd this remedy; nor of thoſe which, another very great pyhſician, Aretæus (*b*), " gave at ſupper " by way of food, boil'd and pickled, juſt in the ſame manner as fiſh," that is, " with ſalt and oil," as it is very eaſy to underſtand from Cælius Aurelianus (*c*). Galen alſo (*d*) ordered the viper-catcher to make uſe of vipers " prepar'd in a pot, after the manner of eels."

But it appears, you will ſay, that he did not cure the viper-catcher by vipers alone: for he confeſſes what he did before. But the ſame does not appear of thoſe two phyſicians above-mention'd. And if taking away blood, and atrabilis by medicines, had cur'd the viper-catcher, Galen would not have given the vipers afterwards, nor have attributed his cure thereto.

And you may ſuppoſe the ſame thing to be ſaid by me, if you ſhould happen to make the ſame objection to the cures happily perform'd by vipers, or by parts of them; either by the Greeks, whom I have quoted; or by the Arabians, who were followers of Galen; or by the phyſicians who have liv'd

(*z*) Nat. Hiſtor. l. 30. c. 13.
(*a*) De Venen. Tentam. 1.
(*b*) De curat. tardar. ægritud. l. 2. c. 13.
(*c*) Morb. Chron. l. 4. c. 1. verſ. fin.
(*d*) De ſimpl. medicam. facult. l. 11. c. 1.

in

in the ages nearer to our own: for theſe are ſo many in number, that it would not only take up a great deal of time to mention them here, but it would be ſuperfluous; as you may ſee them mention'd in Marcus Aurelius Severinus (*e*).

And though, out of theſe cures, there are ſome which you cannot readily admit, yet I do not think you will reject them all as fables, and circulatory frauds; ſince the moſt bitter enemy thereof you can mention, Redi (*f*), has expreſsly aſſerted that the fleſh of vipers is alexipharmac, and "a remedy "againſt many diſeaſes;" and his ſagacious imitator, Valliſneri (*g*), has openly ſhown what he thought, when he affirm'd "that our vipers about Verona "are more efficacious in the cure of diſeaſes, than thoſe about Ferrara and "Mantua, and ſuch other moiſt and marſhy places:" and I remember how often he recommended them in his medical opinions, and how often in conjunction with me; and you may ſee how often he preſcrib'd them in thoſe works that he has publiſh'd. And, indeed, in thoſe countries where you would have thought that this remedy was leſs known, you will find that it has been, and is ſtill, in uſe.

Thus, for the ſake of example, Etmuller, I mean the ſon, although I might quote the father (*h*), and the more ancient German phyſicians, expreſsly relates (*i*), that in the neighbouring province of Sileſia, "the de-"coction of vipers in chicken-broth, was almoſt univerſally made uſe of "among the richer ſort of people, to cure hectics, and impurities of the "blood and lymph."

Thus Hoffman himſelf (*k*); I ſay himſelf, for he was not always conſiſtent with himſelf in this reſpect; when he examin'd a method of cure which had been improperly begun upon an illuſtrious man, who labour'd under a ſpaſmodic aſthma and a dropſy, whoſe diſſection he alſo gives; does not indeed commend the improper time in which both the powder of vipers, and the viper-broth, had been given: but them he commends highly; for "it is "certain from frequent experience," ſays he, "that vipers, given both in "powder, and in decoction, poſſeſs antiſpaſmodic virtues, attemper acrid "humours, promote tranſpiration, and for that reaſon cleanſe the maſs of "blood from all impurities."

So Adolphus (*l*) ſpeaks of a ſoldier, who "was freed from a very trouble-"ſome diſorder, and one that was obſtinate againſt all medicines, by a con-"tinued uſe of remedies, particularly thoſe of the viperine kind." So, finally, not to omit thoſe things which have been publiſh'd among the ſame Germans, while I was writing theſe letters, Jo. Bapt. Molinarius (*m*), a phyſician whom I have before quoted, commending "decoctions prepar'd from the vipers "themſelves," ſays, "for they are approv'd by many experiments, both "thoſe of learned men, and mine."

(*e*) Viper. Pyth. P. 3. c. 7. & alibi.

(*f*) Opere Tom. 4. Lettera A N N. che comincia *La Vipera*.

(*g*) Opere Tom. 3. nel Saggio d'Iſtor. Med. alla parola *Vipera*.

(*h*) Schroder. dilucid. de Animal. Cl. 1. ubi de Vipera, & alibi.

(*i*) Eph. N. C. Cent. 7. & 8. in Append. n. ult.

(*k*) Conſult. & Reſp. Medic. Cent. 1. Caſ. 93.

(*l*) Act. N. C. Tom. 2. Obſ. 158.

(*m*) Specim. de Apopl. P. 2. S. 4. n. 180.

There is no need to ſpeak of other polite nations, ſince Mead (*n*) heard from a learned phyſician, who had reſided many years at Bengal, that in regard to the very Indians themſelves, "it was a conſtant cuſtom there, for "practitioners to preſcribe the uſe of the viper of that country, by way of "diet, to thoſe who had been exhauſted by a long diſeaſe."

But theſe are barbarians, and therefore not ſo ſkilful. What then will you ſay of Mead himſelf, to whom you cannot well prefer any one of the moſt eminent phyſicians, either in point of ſcience, ſkill, judgment, or authority? He certainly (*o*) judg'd with great propriety of the broth of vipers; their jelly, fleſh, and volatile ſalt; found fault with nothing but the too great ſparingneſs of the Engliſh phyſicians in preſcribing this remedy, "which was proper to anſwer the beſt intentions," and the great efficacy of which he himſelf "had ſeen in obſtinate leproſies."

Shall we ſay then, that he ought not to have attributed this efficacy to the vipers, but to the other remedies which were mix'd therewith? He had, however, mix'd nothing with them, having only made uſe of the wine, in which he had macerated two or three vipers in a moderate heat. Nor, to return at length to the patient in queſtion, do I ſuppoſe you will readily imagine, when you have conſider'd all the other things I gave him, which have been particularly made mention of to you by me, that the cure ought to be ſet down to the account of thoſe, rather than of the vipers.

But if you ſhould happen to have any doubt remaining, I have other examples of ſucceſsful cures at hand, in which I gave nothing but the vipers, nor was under a neceſſity of giving any thing elſe. For though, in general, as I love to make uſe of the moſt ſimple medicine I can, I give only the fleſh of the vipers and the broth, particularly againſt an obſtinate ſcabies; which, when other remedies were of no effect, I have driven away by this means, ſo as to make the patients become clean, ſmooth, and fat; yet it ſometimes happens that I have to do with thoſe, who are not only very obſtinately averſe to vipers in particular, but to almoſt all remedies in general: and as it neceſſary to relieve theſe perſons by ſuch kinds of medicines as they themſelves could not perceive and obſerve, I have reſtor'd their health to them, by the ſalutary fraud of boiling vipers in the broths which they made uſe of: and this without their ſuſpecting the deceit.

Among theſe, in particular, was a noble Venetian ſenator, whoſe caſe was, in moſt of the circumſtances, comparable with the caſe of the archdeacon (*p*) already propos'd. For this patient alſo, when he was a very old man, labour'd under a long-continued abſceſs of the leg, in the ſummer-ſeaſon of the year 1732. And, without any other internal medicine beſides that I have ſpoken of, I ſucceeded ſo far, that a man of this age ſhould be able to bear ſo long a diſeaſe, and thoſe continual diſcharges of pus; and ſhould have his vitiated humours chang'd ſo much for the better; that the abſceſs being thus heal'd, he return'd to his former ſtrength and plumpneſs in his whole body, and in that leg in particular, much ſooner than could be expected: and for ſix years afterwards, for he liv'd thus long, he did not need the aſſiſtance of medicine.

(*n*) Tentam. 1. cit. (*o*) Ibid. (*p*) n. 14.

Will

Will any one ſay, then, that the veal or chicken-broth, in which I order'd a ſlic'd viper to be boil'd, both for him and for other perſons, was of ſuch an efficacy, that whatever advantage follow'd therefrom, ought to be aſcrib'd to this rather than to the viper? Some perſons will, perhaps, rather aſk me, why that which has ſucceeded with me; and not only with me, but with moſt phyſicians of every age, and of almoſt all nations; does not ſucceed with all? as if, except this one, all other remedies anſwer'd always, and with all perſons.

With ſome perſons it certainly has not anſwer'd; for this very reaſon, that it has been mix'd with other, and ſtill other remedies. With ſome, becauſe they did not give it for a ſufficient time. With ſome, becauſe they have been deceiv'd in the choice of the vipers, they not having been catch'd in thoſe regions and places that they ſuppos'd, nor at the time of the year it was proper they ſhould have been taken. With others, becauſe they lit on ſuch patients, on ſuch a cauſe, violence, or inveteracy of diſeaſe, as did not leave room for any remedy; or, at leaſt, not for this.

Add other circumſtances of this kind, in as great a number as you pleaſe; ſo that they do not impeach the ſcience, or the veracity, of thoſe perſons, to whom, however, it was not ſufficient, in this affair, to differ from their anceſtors, without endeavouring, at the ſame time, to convict them of the vanity of mountebanks: and I could wiſh this were not too much the cuſtom at preſent.

16. The mention, juſt now made, of that noble ſenator, brings into my mind a circumſtance relative to abſceſſes. Hippocrates (*q*) has taught us, that, "while pus is forming, pains, and fevers, happen more frequently than "when it is already form'd." Yet he has, even himſelf, ſignified, in the fourth book of the Epidemics (*r*), of this dogma, as he has of what is contain'd in many other aphoriſms alſo, that though it is, for the moſt part, true, yet not ſo always: and that, if not where he has ſaid that ſome mature abſceſſes, in diſeaſes, are borne eaſily, and without a fever; for this, Martianus (*s*) contends, is to be underſtood of thoſe that are already ſuppurated; and not, as Valleſius (*t*) underſtands it, of thoſe which are in a ſtate of ſuppuration; at leaſt ſoon after, where, in the opinion of both theſe commentators, he ſays, that, in Leambios, "the ſhoulder, and the fundament, were "ulcerated without a fever."

In the caſe of that ſenator, alſo, when I ſaw the tibia; which had been already ſwell'd from an œdematous tumour of ſome ſtanding, and a late ſlight contuſion, that had been follow'd by a very inconſiderable eryſipelas, and a ſmall degree of fever; become more and more tumid ſoon after, though neither the patient, nor I, obſerv'd any peculiar fever, any rigors, any ſenſe of pain, heat, or pulſation; I, nevertheleſs, began to ſuſpect, that pus was in the mean while preparing, and not without reaſon; as the very evident fluctuation of matter, felt under the hands ſoon after, confirm'd.

Does it, therefore, happen in old men, or even in limbs affected with

(*q*) S. 2. Aph. 47.
(*r*) N. 22. apud Marinell.
(*s*) Annot. ad hunc locum.
(*t*) Comm. ad eund. locum qui ipſi eſt n. 95.

œdematous tumours, that pus is form'd without any marks of its being form'd, or with fewer, and more ſlight, ſymptoms? Both of theſe circumſtances I have heard ſeveral times from experienc'd ſurgeons: and when I conſult reaſon, I ſee that both of them may be conceiv'd; but the ſecond ſtill more than the firſt. For all old men have not very lax fibres, and ſluggiſh and inert humours.

In the archdeacon, therefore, of whom I ſpoke above (*u*), pus was not form'd without pains: and in that very ſenator we are ſpeaking of, it happen'd that, at the ſame time the former abſceſs was open'd, another, much leſs, began at the lower part of the thigh, where there was no œdematous tumour; and we obſerv'd the ſymptoms that generally are obſerv'd to attend the formation of pus.

Yet that pus may be ſometimes generated without a fever, even in thoſe who are robuſt, and at a flouriſhing time of life; and that in parts which were not affected with œdematous tumours; appears from the obſervations of others, and in particular from thoſe of my celebrated friend and collegue Pujati (*x*), who, like Hippocrates, in the caſe of Leambios, ſaw abſceſſes brought on without a fever; at firſt, indeed, in an old woman, but afterwards in a young woman alſo: and leſt you ſhould ſay that this young woman had her humours in a very inert ſtate, as, ſome months after, ſhe died of a dropſical diſorder; he ſaw the ſame alſo in a robuſt man.

17. Now, then, let us alſo touch ſlightly upon ſome things which relate to the caries, that frequently lies conceal'd beneath abſceſſes and ulcers. You have, in the beginning of the fourteenth letter (*y*), obſervations relating to a caries of this kind. But this particularly lies conceal'd in that kind of diſeaſe, to which the Arabians have given the name of *Ventoſitas Spinæ*: although there does not always appear a very evident caries, but only a tumour and ſoftneſs of the bones; as in the two that Mauchart (*z*) examin'd after death.

Therefore, as it is equally proper to ſpeak of this diſeaſe, even upon tumours as upon ulcers; I, for that reaſon, in the fiftieth letter (*a*), when, in treating of tumours, mention was made of certain exoſtoſes; took ſome notice of caries, and its origin. But you will alſo find, in the Sepulchretum, in both places, ſome things relative to the ſame diſeaſe, moſt of which were obſerv'd at Padua; that is, in the ſecond ſection (*b*), which, in this fourth book, is entitl'd *De Tumoribus*, and in this fourth ſection, which is intitl'd *De Ulceribus* (*c*).

Yet in neither place is Pandolphinus, who publiſh'd a treatiſe of the "ventoſity," ſpoken of; nor Merclinus, who increas'd it with ſo many annotations and obſervations: nor is any thing added from Schelhammer (*d*), who treats of the diſorder briefly indeed, but with learning and ſkill; producing obſervations alſo (*e*), ſome of which I do not ſee in the Sepulchretum,

(*u*) N. 14.
(*x*) Dec. Obſ. 7. n. 3.
(*y*) N. 3. & ſeqq.
(*z*) Eph. N. C. Cent. 9. Obſ. 33. & 34.
(*a*) N. 57. 59.
(*b*) Obſ. 20. & in Addit. Obſ. 10.
(*c*) Obſ. 5. § 1. &c.
(*d*) De hum. corp. Tumorib. S. 2. P. 1. n. 94. & ſeqq.
(*e*) N. 98, 99.

and

and among theſe even his own: which, at that time, excellently well defended Van Horne (*f*), who differ'd from Tulpius (*g*), againſt the anſwer of Merclinus (*h*), who contends (*i*) that Corn. Celſus (*k*), in the paſſage which Tulpius referr'd to, had meant by the word *cancer* of the bone, a diſorder very ſimilar to the *ventoſitas ſpinæ*.

And, certainly, the reading of that paſſage ſhews, that the word *cancer* is not ſaid of bone, as Schelhammer rightly aſſerts; which I do not ſo much wonder that Tulpius and Merclinus had not ſeen, as that they ſhould have ſeen what is not in this place; I mean, the term *cancer of the bone*. For he ſays, and even repeats it over and over again, that Celſus does not call this diſorder ſimply a *cancer*, but *a cancer of the bone*; ſo that he does not ſeem to have inſpected this paſſage of Celſus.

18. But the queſtion here is of names: ſurgeons, however, are ſometimes deceiv'd in the thing itſelf; and thoſe, even ſuch as are pretty far advanc'd in life, and very much experienc'd; that is, they are deceiv'd in judging of the caries, which lies open neither to the eyes nor to the probe. It is true, indeed, that it is an indication of a caries, if the matter which proceeds from an ulcer is brown, or ſomewhat black.

Yet if the matter diſcharg'd be not ting'd with ſuch a colour, we muſt not immediately deny that there is a caries beneath. For if this caries occupy a ſmall part of a bone which is not thick, and it lie under a conſiderable quantity of fleſh, which is hollow'd out by large ulcerous ſinuſſes; even this one ſimple circumſtance may be the reaſon, why the matter diſcharg'd from the orifice of the ulcer is not of a brown colour; in conſequence of the very little matter which flows from the bone, being mix'd and diluted with that which flows from the fleſh in conſiderable quantity, and the brown colour thereof being hid.

And this I know, for a certainty, to have happen'd in a young Venetian matron, in the year 1736; who having had a large abſceſs form'd in one ſide of the buttock, and not having it open'd till late, had been already treated with a great number of remedies, both internal and external, for a long time together, ; but to no effect. The ſurgeons were, therefore, long deceiv'd by the colour of the pus not being brown, and thereby prevented from ſuſpecting a caries; till at length they obſerv'd the probe to paſs very eaſily through that part of the correſponding os ilium, which, about the middle of it, particularly in women, and thoſe that are pretty young, is tranſparent, by reaſon of its thinneſs, and which, in this patient, was already eroded by a caries: ſo that the probe paſs'd on quite into the cavity of the belly.

Nor do I doubt, but as the thinneſs of that bony part in this very worthy matron, who deſerv'd a more happy lot, afforded a very eaſy paſſage for the pus into the cavity of the belly, ſo that in others who have wounds inflicted upon them with ſharp inſtruments at that place, it admits the point of a ſword, or any ſimilar inſtrument, to injure the inteſtines without difficulty.

On the other hand, it frequently happens that, by examining the colour

(*f*) Microtechn. S. 2. P. 1. § 33.
(*g*) Chſ. Medic. l. 4. c. 13.
(*h*) Ad Pandolphin. c. 7. Annot. 1.
(*i*) P. 1. cit. n. 100.
(*k*) De Medicina, l. 8. c. 10. Edit. Almeloven. p. 532. l. 15. & ſeqq.

of the probe, which they have made uſe of in the examination of ulcers many ſurgeons do not heſitate to pronounce the caſe bad; not attending, I ſuppoſe, to this circumſtance, that it is ſaid by Hippocrates (*l*), "thoſe who "have the probe colour'd from the pus, as if from fire, the greateſt part "(not all) of them die;" nor yet obſerving, that the queſtion is here of empyematic patients, and not of any colour of the probe, but of that which, inſtead of ſuffering this inſtrument to retain its "white and ſilver hue, cauſes "it to be extracted with the appearance of lead, and as if burnt by the "fire, which is a proof of the great acrimony and corroſive nature of the "pus," to uſe the words of that very excellent interpreter Duretus (*m*).

Finally, among the other ſpecies of caries, that ſpecies would not only be worthy of peculiar mention, but very worthy of examination, under which, after having corroded the cranium, "appear'd to the eye" of Slevogtius (*n*), "by the help of glaſſes, a congeries of innumerable ſmall worms, entangl'd "in a viſcid humour; many of which, upon being thrown into warm water, "gave tokens of their being alive, by their motion." But as the obſervator himſelf, who ſaw theſe appearances in the dead body, and might alſo have obſerv'd ſome things relative thereto in the living patient, has deferr'd the *ætiology of this verminous caries* to another time (*o*); you will be leſs ſurpriz'd if we do not take upon us to make any conjectures thereupon.

19. But now let us ſubjoin thoſe things that belong to the ſecond of the two heads propos'd (*p*)); that is, to ulcerated tumours and gangrenes.

Beſides the obſervations that have been already ſent to you, relating to thoſe tumours, this one remains; which was made by our Mediavia, in the latter end of September, in the year 1739.

20. A young man had an ulcerated tumour in one ſide of his neck. As it ſeem'd proper, to the ſurgeon, that ſomething in this ulcer ſhould be conſum'd, by the help of that arcanum which Philip Maſſieri was wont to call the *pulvis corroſivus magiſtralis*, and he us'd to apply with great ſucceſs, but at the ſame time with great caution; both the fever and pain of the head, which exiſted before, were ſo increas'd by the application, that neither in conſequence of repeated loſſes of blood, in which a polypous cruſt was not wanting, nor yet by diluents, and other remedies that were given and applied, did they give way or decreaſe. For although the pain in the ulcer itſelf was diminiſh'd; yet in the forehead, where it was more ſevere, it never remitted. The patient, therefore, died delirious and convuls'd.

The tumour had not at all injur'd the ſubjected muſcle. This was what they call *levator ſcapulæ*, and in that part which lies immediately under the common integuments. The jugular glands of that ſide were tumid and hard.

The veſſels of the brain were all diſtended with blood: the medullary ſubſtance was diſtinguiſh'd with bloody points wherever you cut into it, and much ſofter alſo than it ought naturally to be; whereas the cortical ſubſtance was in a natural ſtate. In the lateral ventricles was a great quantity of limpid water.

(*l*) Coac. Prænot. apud Duret. l. 2. c. 16. n. 48.
(*m*) Ad eum locum.
(*n*) Diſſert. de Carie Cran. in Hiſtoriæ fine.
(*o*) § 26.
(*p*) N. 14.

21. Although

21. Although how much danger there is in attempting to deſtroy, by eſcharotic medicines, fungous fleſh, that grows up in ulcers, in the extreme parts of the body, appears in particular from the obſervation of that faithful writer Benevoli (*q*); yet the uſe of thoſe kinds of remedies, to the ſame purpoſe, even in other places, is not without danger, where the habit is deprav'd: as, from the fever join'd with a pain in the head, in the young man in queſtion, it appears to have been.

But let us go, from this ulcerated tumour, to that diſeaſe which is claſs'd among tumours, by the writers of chirurgical inſtitutions, and is at the ſame time join'd with a great corruption of the parts; I mean to a gangrene: and I ſhall begin with ſome obſervations of Valſalva.

22. A young man, of two-and-twenty years of age; of a moderate ſtature and of a tolerable good habit of body, though of a pale and yellowiſh colour; falling from a high building, upon a very ſharp ſtone, broke the neck of the os femoris; and, at the ſame time, was wounded in that part by the ſtone. Being receiv'd into the hoſpital of St. Mary de Morte, and treated there in a proper manner, he not only complain'd of a weight in his cheſt, join'd with a difficulty of breathing; although he ſpat nothing bloody, and had no contuſion on the external parts of his thorax, that could come under the notice of the ſenſes; but moreover, on the fourth day began to be delirious, and to complain of a pain in the wound, and of certain convulſive motions in that part.

On the following night, the ſame part was ſeiz'd with a very violent gangrene; which had ſo encreas'd, about the fourteenth hour of the next day, as to extend itſelf, from the boundaries of the abdomen oppoſite to the wound, to the whole foot. The cuticle of the femur was raiſed up in many places, juſt as if medicines of the bliſtering kind had been applied: and theſe veſicles were fill'd with a ſerous humour, which had eroded the ſkin in many places, by its acrimony; ſo that a great quantity of water was diſcharg'd. In this manner the patient died on the fifth day.

The body was, a few hours after death, ting'd with the greateſt blackneſs; as if it had been affected with an univerſal gangrene: and it ſwell'd ſoon after to ſuch a degree, as to ſeem three times thicker than it naturally is.

23. I did not think this hiſtory ought to be paſs'd over; as it ſhows an exceedingly deprav'd diſpoſition of the humours, and a very ſpeedy progreſs of the gangrene; although Valſalva has not given the diſſection: which, I ſuppoſe to have happen'd, becauſe it was not in his power to perform it.

For it appears, that if it had been in his power, he would not have omitted it; not only from other circumſtances, which I have related in his life, but particularly, from that which, if he himſelf had not added it here, I ſhould not very eaſily have believ'd. The ſerum which gives riſe to a gangrene is ſo acrid, ſays he, that when I taſted it, at another time, I not only perceiv'd the greateſt acrimony, but it alſo irritated the papillæ of the tongue almoſt for a whole day. See how far the deſire of knowing, and making experiments, has carried ſome men!

(*q*) 30.

However,

However, you have an inſtance of a univerſal gangrene in Tulpius (*r*); but in an old man, whoſe ſtrength had been pull'd down for a long time paſt. You will alſo have one in Warren (*s*), but in a yellow fever, which was a ſpecies of the plague. Yet the internal cauſe of gangrenes does not always conſiſt in the ſole depravity of the humours. For they ſometimes ſeize upon the legs, becauſe the great artery is compreſs'd by a ſcirrhous tumour in the belly (*t*): to which cauſe that obſervation of Hildanus, which you will read in this fourth ſection of the Sepulchretum (*u*), relates; although in that, not only the aorta, but the neighbouring vena cava alſo, was compreſs'd; for this eaſily happens in trunks that are ſo near to each other.

Yet it does not follow, on the other hand, that whatever can ſufficiently compreſs any vein, is equally ſufficient to compreſs a neighbouring artery; ſo that the conjecture of the celebrated Van Swieten (*x*), is equally agreeable to probability, and reaſon, where he accounts for the tumour, and threatening gangrene, of the left foot, from the ſtricture of the iliac vein on that ſide; which veſſel, and which only, was preſs'd upon by the extremity of the inteſtine colon, that was very much diſtended with flatus.

And the influx of blood into the limbs is prevented, or diminiſh'd, by ſuch things as preſs upon the artery, by lying thereupon; and moreover, by ſtill other cauſes: among which is the very rare caſe, of gangrene, in the fleſhy coat of the artery itſelf, although the parts that lie round about are ſound; as in the caſe publiſh'd at Hall, in the year 1742, entitled, "Of the ampu-"tation of a thigh, without any effuſion of blood." That cauſe is leſs rare, which produces the ſame effect in amputation; I mean the degeneracy of the coats of the artery into a bony nature, which not only takes away their flexibility, but ſtreightens the paſſage of the blood. Kulmus (*y*), therefore, judg'd it to be from this cauſe, that "thoſe in particular who are advanc'd "in age, are ſometimes ſeiz'd with a gangrene of the foot, without any ex-"ternal cauſe having preceded." And, without doubt, it was from this cauſe in a noble old man, whoſe hiſtory you will find in the works of the illuſtrious Van Swieten (*z*).

24. Moreover, there is a certain ſpecies of gangrene, and even of ſphacelus, which very rarely occurs among the natives of this country, ſo that it had never yet been ſeen by Valſalva, when he related to me, at that time a young man, from the report of others, a caſe of an exſiccation beginning from the great toe, and being gradually produc'd quite to the femur; ſo that the foot and the whole leg were dry, and without any diſagreeable ſmell, as in a mummy: and that this had brought on death, in a certain woman, ſome years before.

But he ſaw the caſe afterwards, and I with him, before I left Bologna,

(*r*) Obſ. Medic. l. 3. c. 46.
(*s*) Vid. Haller in Addend. ad pag. 662. ſuar. Acceſſion. ad Boerh. Meth. Stud. Medic.
(*t*) Vid. Acta Erud. Lipſ. A. 1693. M. Nov. in Relat. Chirurg. Barbet.
(*u*) Obſ. 10. § 2.
(*x*) Comment. in Boerh. Aphor. 422. ad B.
(*y*) Diſput. de Tend. Achill. diſrupto &c. in ipſo fine.
(*z*) Comment. cit. § 424.

in

in the hoſpital of incurables. And indeed, among his *conſilia*, I have read one which was written for a monk that labour'd under a diſeaſe of this kind. This man was more than forty years of age, of a full habit, and had his fluids inclining to a ſcorbutic dyſcraſy; beſides that, he had been before ſubject to tetters, and the gout; and alſo, even then, and for a long time paſt, to frequent ſuppurations of one of his great toes, from whence that part had always retain'd a brown colour, till it began to be ſeiz'd with an exſiccation, which was very ſlowly propogated through the whole of that toe, and, afterwards, through the whole of the next toe, in like manner.

And this toe, like the great toe; which they had ampulated in vain; had always remain'd wither'd, and dry, from the time it had been ſeiz'd with this diſeaſe; except that lately, about the extenſor tendon of that toe, ſome ſigns of incipient pus had been obſerv'd. And although, for the moſt part, there ſeem'd to be ſome obſcure inflammation in the metatarſus; yet this was without any traces of a ſtagnating humour, and attended with moderate pain. A fever alſo had, more than once, come on, which had its exacerbation about the evening; but without any previous horror, and without any very violent ſymptom to attend it.

Theſe circumſtances I was willing to deſcribe to you accurately, that you may compare them, preſently, with thoſe examples which I have ſince read in authors, or have been ſince propos'd to me. Theſe caſes have been very frequent in ſome of the provinces of France, as well as in other places. And not only about the year 1710, was this dry gangrene remark'd, but alſo about the year 1676, as is ſaid in the Hiſtory of that Royal Academy of Sciences (*a*): and even in the year 1706, as you may ſee taken notice of, at large, by Rudolphus Jacobus Camerarius (*b*); and again in the year 1747, as you will find by turning over the Memoirs of the Academy (*c*), laſt ſpoken of.

And there the fault is always laid to the vitiated grains of rye, in conſequence of being left by the poor people, in preparing their flour, together with the ſound and good grain, in a time of ſcarcity; for none but theſe poor people were ſeiz'd with this diſeaſe: and the unſound grain was accus'd, on another occaſion, by Brunnerus (*d*), that is to ſay, when the inhabitants of the Black Foreſt were troubled with the ſame diſeaſe. Yet I ſhould not believe, that this grain could have had ſo much effect, without a certain diſpoſition of body previous thereto; or, at leaſt, at the time when males only, and not females, if you except a few little girls, were attack'd with the ſame kind of gangrene, in the ſame villages.

However, at other times it, for the moſt part, affected both ſexes indiſcriminately: and ſomewhat differently at different times; ſo that it occupied other limbs, and other parts alſo, but in general began in the toes: the other differences you will ſee, of yourſelf, by examining the books, and the authors, that I have nam'd. For I return to thoſe caſes, wherein the grain could not be accus'd.

(*a*) A. 1710. Botanique.
(*b*) Eph. N. C. Cent. 6. Obſ. 82.
(*c*) A. 1748.
(*d*) Eph. cit. Dec. 3. A. 2. Obſ. 224.

Indeed

Indeed Benivenius (*e*), where he ſpeaks of the unhappy event of gangrenes, that begin from the toe, eſpecially in old men, ſeems to hint ſomething that relates to this ſubject, when he ſays, "that the fleſh begins, by "degrees, to grow black, or to become livid: and, indeed, ſometimes to "grow dry, and wither'd, at the ſame time."

But Hildanus more certainly, and openly (*f*); in a man of ſeventy years of age, who had been ſubject to the gout; deſcribes a gangrene which crept upwards, by degrees, from the toes, (after an uneaſy ſenſation of cold, and a ſtupor) in ſuch a manner, that the foot and leg became black, like charcoal, and cold, immoderately dry, and extenuated; but without any pain at any time: the pulſe being but little chang'd, and the appetite for food ſcarcely diminiſh'd.

The ſame author produces an obſervation of Smetius (*g*), that is to ſay, an obſervation of a woman's foot being ſeiz'd with a ſphacelus of this kind; ſo that becoming wither'd, dry, and black, it reſembl'd an ox's tongue, harden'd with ſmoke. And to this ſubject belongs, in part, what Barbette (*h*) ſays of the ſcorbutic gangrene; I mean that it generally takes its beginning from the toe; that it degenerates into a dry cruſt; has no bad ſmell; and ſometimes no pain.

Now attend to a caſe that was deſcrib'd to me by letter, when Matthew Tornieri, who was, when living, an eminent phyſician at Vicenza, conſulted me in the latter end of February, in the year 1720, for a noble count.

25. This nobleman, being of a ſlender habit, but an excellent colour, was as yet briſk, healthy, and robuſt, when he completed his four-ſcore-and-fourth year; having been never ſeiz'd with any diſorder that was worthy of remark, during the courſe of ſo long a life. About the latter end of January he was ſeiz'd with an unuſual ſenſe of coldneſs: and three days after, with ſo great a coldneſs, that he was oblig'd to go to bed; and was there, nevertheleſs, cold for ſome hours: till, by the frequent application of warm clothes, the other parts of the body, at length, grew warm; but all the toes of the left foot, and the metatarſus, remain'd very cold, felt nothing, and were but juſt bent by the force of the flexor muſcles; the fleſh of which, you know, does not lie on the toes themſelves: and what was much worſe, the following day, a ſomewhat livid colour was obſerv'd to be now proceeding from the great toe, into the metatarſus.

Remedies were given internally, and applied externally, to obviate this diſorder. But although the lividneſs in the metatarſus, and the coldneſs, ſeem'd to be ſomewhat leſs; yet, about the end of February, the extremities of the toes were already cover'd with a black ſkin, which was, at the ſame time, dry, and hard like a mummy: nor were the beginnings of a future diſeaſe wanting in the metatarſus, the ſkin being already black, in two places, on the back of it, and even in one of thoſe places already hard.

It was alſo ſomewhat hard at the tarſus, in one certain place, where it was

(*e*) De abditis nonnullis &c. morbor. cauſis c. 71.
(*f*) Cent. 4. Obſ. Chir. 92
(*g*) de Gangr. & Sphacel. c. 7. in fin.
(*h*) Chirurg. P. 2. l. 1. c. 14.

black. And the tarſus itſelf was, laſt of all, become ſomewhat tumid; and, if you preſs'd it with the finger, preſerv'd the marks of the preſſure, and was in pain. And indeed a ſmall and white veſicle had rais'd itſelf up under the ſole of the foot; which veſicle contain'd but a very ſmall quantity of water. At the ankle was almoſt the ſame tumour as in the tarſus. The other part of the leg was rather ſomewhat waſted and thin.

Under theſe ſymptoms the patient preſerv'd his uſual alacrity, the uſual ſtrength of his pulſe, and the vigour of his appetite; although the fever, which was ſlight indeed, continued conſtantly nevertheleſs, from the ſeventh day of the diſeaſe, when it had firſt begun; ſo that he ate his food very freely, eſpecially for a man who had never been us'd to eat much; and this was allow'd him not only in conſiderable quantity, but of a pretty ſolid conſiſtence; in order to preſerve his ſtrength.

After having read this account, and perceiv'd that no other hope remain'd, except that the patient's life might be prolong'd for a conſiderable time, I immediately wrote back an anſwer to that effect: but there is no need to tell the whole of it here. For I diſcours'd, pretty much at large, upon the remedies which had been made uſe of, and of ſuch as might, in my opinion, be added, with that ingenuouſneſs which is requiſite, and which I have always made uſe of on theſe occaſions. When I had ſignified what I diſapprov'd, or what I was ſuſpicious of; I expreſly recommended, among other things, with Hildanus (*i*), the juice of earth-worms, prepar'd in the manner that Wierus us'd to prepare it, to be applied externally to the part yet ſound, in order to prevent the progreſs of the exſiccation.

Yet I did not forbear to mention, that, unleſs the ſeaſon of the year forbad expoſing the patient's foot frequently to the cold air, it might alſo be conſider'd, whether that method which had ſucceeded ſo well, for the ſame purpoſe, with that phyſician at the Hague, Samuel Cabliau (*k*), was not worthy of imitation in this caſe: for he, having order'd the foot, and leg, which was almoſt wholly dead with a ſphacelus, to be "continually touch'd, "or, as it were, painted, with a pretty large pencil, or bruſh, dip'd in the "beſt ſpirit of turpentine;" brought about, that the leg ſhould adhere to the part that was yet ſound, and the ſphacelus not proceed upwards; the ſphacelated part being "torrid, and dry, and almoſt like an ægyptian mum-"my:" and by theſe means he preſerv'd, for nearly ſix months together, an old woman of almoſt ninety-two years of age.

The other things which I had approv'd, or added, being done; the patient, if he did not live ſo long as this woman, at leaſt, liv'd much longer than thoſe who were preſent had ſhown any expectations, or hopes of. For, about the later end of May, I was again conſulted by letters, in which Tornieri related, that the patient was ſtill full of ſpirits, as before; his pulſe not being weak, and his natural roſy colour almoſt the ſame; that his appetite as good; he had no thriſt; he diſcharg'd his urine in a proper quantity; which was of a colour and conſiſtence that was natural; but that he did not

(*i*) l. ſupra ad n. 24. cit. c. 13. (*k*) Eph. N. C. Dec. 3. A. 5. & 6. Obſ. 215.

diſcharge the harden'd inteſtinal fœces, more than once in five or ſix days, as he us'd to do in health.

And as to the diſorder itſelf, he ſaid that it had made ſome progreſs within thoſe three months, but ſo ſlowly and gradually, that about fifty days had paſs'd before the toes, and the metatarſus, and the tarſus, quite to the ankle-bones, were become black, hard, and perfectly ſimilar to a mummy.

But after that, when the black and hard ſkin had rais'd itſelf up near the ankles, an ulcer was diſcover'd to be under it, when taken away by the forceps: and this ulcer was, at the time of writing, of the breadth of a man's hand, of a lively red colour at its upper circumference, and not without pain at the time of dreſſing; but that the external ankle, and a part of the tibia, were black: at the lower circumference of the ulcer the fleſh was ſoft and putrid, and ſomewhat ſtinking; and when this was taken away by degrees, as they attempted to do, and as it was in that place where the dryneſs and hardneſs of the tarſus ended, they ſhould ſee, he ſaid, whether there was any thing putrid beneath: or whether all the ſoft parts of the tarſus had been really converted into a mummy, as they ſeem'd to have been.

As to what related to the leg, he ſaid that anteriorly it was in a natural ſtate; but that the calf was ſomewhat tumid: that when the leg was compreſs'd, a drop of pus was preſs'd down into the ulcer; which pus was ſometimes of a white colour, and ſometimes ting'd with red: yet that the limb preſerv'd the natural warmth and colour of its ſkin. That the pus of the ulcer was variegated: and that to the part of it which was putrid, ſuch things were applied as are enemies to putrefaction; but that when it was of a lively red, the juice of earth-worms was applied, as they alſo found it, by experience, to be of advantage in this part.

As to what remains, he ſaid that this ſlow fever never had gone off; but was ſometimes even increas'd: that ſome nights were paſs'd in a very reſtleſs manner, on account of the itching on the ſurface of the body, and ſometimes from ſpaſmodic motions of the ſound leg: finally, although the ſkin was even then ſoft, the patient was nevertheleſs reduc'd to the laſt ſtate of leanneſs.

I was diſpleas'd with this laſt circumſtance in particular, as well as many others, becauſe it very greatly diminiſh'd my hope of protracting life for a very long time. Yet that I might not be wanting to this noble old man, and to his very benevolent phyſician, both of whom aſcrib'd more merit to what I had written before, than I could by any means acknowledge; when I ſent my anſwer to the letter, I recommended ſuch things in particular, as were ſuitable againſt the other ſymptoms; but particularly againſt the emaciated ſtate of body.

I therefore recommended, of the two remedies which are the moſt powerful at that time of the year, I mean the viper and milk; to try which they ſhould prefer: adding this alſo, in regard to milk, that if they thought I had propos'd any thing uſeful from Hildanus, in my former opinion, they ſhould alſo take this from the ſame author (*l*); who recommends, againſt that very ſame ſpecies of diſorder, not only "womens milk," but, "if this

(*l*) c. 13. cit.

"cannot

" cannot be got, the milk of aſſes :" from which, if it ſhould be borne well, there would be a natural tranſition to that of cows. Which of theſe remedies they preferr'd I do not know: this however I know, that the life of the patient could not be prolong'd to the beginning of the ſummer.

26. Thus you have at large, as it is of a diſeaſe not very frequent among us, what was written to me, and what I anſwered thereto. But whether in this ſpecies of gangrene alſo, there was room to propoſe, internally, the Peruvian bark, and externally, warm water, I ſhould perhaps have conſider'd, if the obſervations upon the former had been then extant; although it anſwered differently at different times; I mean the obſervations made by many very ingenious men, but particularly thoſe ſo often repeated at Bologna, by the very ſkilful and experienc'd academics (*m*): and if the cuſtom of the celebrated Benevoli, in regard to warm water, had been known; particularly from that obſervation (*n*) wherein he, by theſe means, overcame gangrenes, which not only produc'd a black but a hard ſkin alſo.

And as to what relates to the Peruvian bark, although I know that it is commended by the celebrated ſurgeon Guiſſard (*o*), in a dry gangrene; yet, on the other hand, I know that its efficacy has been call'd in queſtion by another (*p*): however, as among ſeveral things which have, at different times, ſhown the utility of the Peruvian bark againſt other gangrenes, that experiment ſeems principally to deſerve attention, wherein every thing became better while the bark was taken, but worſe while it was omitted; and finally, better again while it was again made uſe of: ſo I ſhould believe that there is no inconſiderable weight in a ſimilar obſervation, which is extant in the hiſtory of the Royal Academy of Sciences at Paris (*q*), in order to compute the ſame utility in a dry gangrene: for a dry gangrene, which had begun in the foot, was alternately better and worſe, according to the alternate exhibition and intermiſſion of the bark; till at length it was quite overcome by the uſe thereof, without any farther interruption.

Nevertheleſs, you ſee it is here to be wiſh'd that the experiment were often repeated, and not only in an incipient gangrene, but where it was already perfect: and you alſo ſee, to go on to external remedies, that there is no room for the method of Benevoli, when it is determin'd not to remove what is hard, but to make it ſtill more dry and hard, that the patient may be preſerv'd the longer: to which purpoſe ſuch things ought to be applied, as may preſerve the dead part, in the ſame manner that an embalm'd carcaſe is preſerv'd.

On the other hand, we muſt ſee to it, with the utmoſt caution, that we do not eaſily deſcend to the uſe of ſuch applications as excite a generation of pus; bearing in mind thoſe phyſicians, who, hoping to ſeparate, by ſuppuration, that part of the great toe which was dead, from the living, caus'd the gangrene which Boerhaave (*r*) had put a ſtop to, in that part, for ſix months, to ſpread quite up to the thigh in the ſpace of three days.

(*m*) Comment. de Bonon. Sc. Acad. Tom. 2. P. 1. inter Medica.

(*n*) 16.

(*o*) Vid. apud Haller. in Acceſſ. ad Boerh. Meth. Stud. Med. P. 13. c. 4.

(*p*) Vid. Act. Erud. Lipſ. A. 1751. M. Jul.

(*q*) A. 1748.

(*r*) Vid. apud Swieten. in Comment. ad illius Aphor. § 1084.

And, indeed, although there was already a kindly ſuppuration in a very ſimilar caſe, yet the celebrated Dieter. Sproegelius (*s*) relates that the patient could not be ſav'd; and admoniſhes us, that, in diſorders of this kind, we muſt not very readily truſt to ſuppurations; not even thoſe that have been wiſh'd for, and have ſucceeded according to our deſire. Which circumſtance, of itſelf, might check the hopes of thoſe who would recommend the amputation of the dead member, in gangrenes of this kind, in old perſons.

But other circumſtances are alſo to be taken into the acccount; as, for inſtance, if, as Kulmus (*t*) ſuppos'd, and as it certainly ſometimes happens, the gangrene had its origin from the arteries being become bony, and conſequently ſtreighten'd, higher up: or if, in the blood, as very froquently is the caſe, there was an inſuperable cauſe of gangrene, from whence it happens, for the moſt part, that the ſame diſorder will attack the remaining part, either of the ſame limb, or of another, ſoon after the ſeparation has been made; whether this has been done by means of amputation by the ſurgeon, as in the obſervations of Hildanus (*u*), Tulpius (*x*), and others, or by means of nature itſelf, as you may ſee in the examples of gangrene from the vitiated grains of rye, which we have referr'd to above (*y*).

Theſe reaſons therefore, beſides a decrepid age, did not permit me to think of amputating the foot in the patient deſcrib'd by me. But even if this extreme kind of remedy could have been borne by a very old man, and the ſame diſorder had return'd to no other part ſoon after, yet it would have been attended with this difficulty, that the patient would perhaps have been carried off ſoon after by ſome new diſeaſe; that is, by one of theſe to which this extreme old age is ſubject.

For to uſe the example of one diſeaſe only, and one therefore that relates to the ſubject of this letter, among my auditors of long-ſtanding is a phyſician who ſaw three old men here, and that not long ſince; one of whom was ſeiz'd with an ulcer of the calcaneum, and the others with a gangrene of that part; happily and perfectly cur'd: yet in each of them the cure was ſucceeded by a diſcharge of ſandy particles in the urine; which diſcharge was ſucceeded by an inflammation of the bladder, and this inflammation by death.

Wherefore, although in the more firm and robuſt times of life, there is room for heroical cures, as they are call'd; for to the danger is oppos'd the hope of a long and happy life; yet in extreme old age, as there is ſcarcely any hope to be oppos'd to the very great danger, and men far advanc'd in life, though cur'd by a ſafe and mild method, nevertheleſs die ſoon after; it does not ſeem that we ſhould raſhly recede from this ſecond method of cure in like caſes. Farewell.

(*s*) Obſ. Select. §. 37.
(*t*) Vid. ſupra, n. 23.
(*u*) Cent. 4. Obſ. 92.
(*x*) Obſ. Med. l. 3. c. 47.
(*y*) n. 24.

LETTER

LETTER the FIFTY-SIXTH

Treats of Fractures and Luxations of the Bones, and of other Diſeaſes that are injurious to Motion.

1. ALTHOUGH the Sepulchretum divides the diſorders, at preſent to be treated of, into the two next ſections, that is, the fifth and ſixth; yet theſe are ſo ſhort, that the obſervations and ſcholia of both of the ſections are contain'd in two leaves: nor would they fill up this ſpace, if ſome things that had been already ſaid were not repeated: and this you will find to be done in the very beginning of the fifth ſection, if you compare the firſt article of the firſt obſervation, and the two firſt heads of the ſcholium ſubjoin'd thereto, with the third article of the fifteenth obſervation in the ſecond ſection, and with the ſcholium that is tack'd to this article. It is my pleaſure, however, as I am determin'd not to repeat over again what has been ſaid already of fractur'd bones, when treating of wounds and blows, to comprize every thing that remains in the papers of Valſalva, or in mine, in relation to the diſorders in queſtion, in this one letter; beginning with that bone upon which our obſervations have been chiefly exercis'd, as we enquir'd whether it was broken or luxated. Which circumſtance obliges us to ſpeak promiſcuouſly, and not ſeparately, of both kinds of diſeaſe.

2. The ancients did not doubt but the head of the femur might, like the heads of other bones, be diſlodg'd from its ſituation; and this ſo much the leſs, becauſe, although they knew that the replacing of it, when fallen out, was difficult, and the preſerving of it in its place ſtill more ſo, yet they were not ignorant, from the teſtimony of Hippocrates, Diocles, Philotimus, Nileus, and Heraclides Tarentinus, that both of them had, ſometimes, been exceedingly well brought about.

For theſe "very celebrated authors have tranſmitted down in their "writings," as Celſus (*a*) ſays, "that they had wholly reſtor'd them;" and this Heraclides, indeed, more than once; as appears from that paſſage of his which is preſerv'd to us by Galen (*b*), who has affirm'd that he himſelf, alſo, "had already cur'd a luxation of the femur twice, in ſuch a manner, "that it did not fall out for the time to come:" and the ſame author has

(*a*) De Medic. l. 8. c. 20. (*b*) In Hippocr. de Artic. Comment. l. 4. n. 42.

affirm'd,

affirm'd, that, after Heraclides, " many other more modern practitioners" had done the ſame.

But as to what had been remark'd by Heraclides and Galen, that this attempt ſucceeded when the ligamentum teres, as it is call'd, is relax'd, and not ruptur'd; that is, the ligament whereby the femur is join'd with the acetabulum, and for this reaſon; becauſe by medicines it may be brought about, that, the laxating humour being conſum'd, the relax'd ligament may again be contracted, but not that the ruptur'd ligament may again coaleſce: though phyſicians are, in part, taught the truth thereby, yet they are, in part, drawn away ſtill more and more from the knowledge of the truth.

For it is true that, when this ligament is relax'd, the head of the femur falls out of the acetabulum; but it is not equally true, that the ſame head often falls out of its acetabulum, becauſe that ligament is ruptur'd. Therefore, although the luxation of the femur from an internal cauſe, that is, one whereby the ligament may be relax'd, cannot be denied; yet the luxation of this bone from an external cauſe, that is to ſay, from a violence which ruptures the ligament, ought not ſo eaſily to have been plac'd amongſt the moſt frequent luxations.

Nor would it have been plac'd there, if the difficulty, on the one hand, in breaking through a very ſtrong ligament, and, on the other hand, the difficulty in pulling away the head of the thigh from its cervix, or in breaking the cervix, had been compar'd one with another. For it would have been perceiv'd, that the force, whereby this ligament can be broken, could much ſooner pull away this head from its cervix, or break the cervix; and that, by theſe means, unleſs ſome bodies (*c*) have any thing peculiar in this part, the femur would fall out of its ſituation, by reaſon of the head being pull'd away, or by reaſon of the fracture in the cervix, and not in conſequence of a luxation.

But theſe things, and others of a ſimilar nature, did but juſt begin to be taken notice of at length, when diſſection perform'd on dead bodies very evidently ſhew'd, that what was ſuppos'd to be a luxation of the head of the femur, from an external cauſe, was, in fact, almoſt always either a ſeparation of the head, or a fracture of the neck.

Nor was it immediately conſider'd what were the cauſes of this circumſtance, from the time in which Parey ingenuouſly confeſs'd (*d*), that it had ſometimes happen'd to cautious ſurgeons, that they had taken the ſeparation of the head of the femur; and even to himſelf, in the caſe of a matron, that he had taken the fracture of the neck; for a luxation. But Parey had been deceiv'd by the great trochanter of the femur, which he, touching above the iſchion, had ſuppos'd to be the head of the bone; till on the day after, while he was again endeavouring to force the bone into the acetabulum, he was warn'd of a fracture, by hearing the colliſion of the broken bones againſt each other: and was the firſt of all, as far as I know, who diſcover'd this fallacy in the thigh-bone; which is the more conſiderable, as, by reaſon of the commonneſs and ſimilitude of the ſigns, it happens the more eaſily.

(*c*) Vid. infra, n° 5. in fine. (*d*) Oper. l. 14. c. 21.

For

For our Columbus (*e*) had, in general, hinted at it, (but in children only) when, after having taught, that "if we boil the bones of a kid, or a lamb, "or any other animal, lately born, we ſhall ſee certain parts in their extre- "mities," that is, the appendices, or epiphyſes, "to be pull'd away and fall "off;" he then, after many things being interpos'd, admoniſh'd us, that if "the tender bones of children are very roughly handl'd by an unſkilful phy- "ſician, the ligaments are extended ſo far as to pull off the appendages "with them."

And you will readily perceive that divulſion, and fracture, as far as relates to the preſent diſcourſe, come to the ſame thing; and may, for that reaſon, be promiſcuouſly conſider'd by me; when you obſerve that whether the head of the femur be pull'd away from the cervix, or the cervix from the femur, theſe things can certainly not happen in adult bodies without a fracture: no more than if the very cervix itſelf be broken in the middle.

Nor yet will you think it of any very great importance, not to ſeparate a divulſion from a fracture, if you attend to the effect and the ſigns of the caſe; unleſs you ſuppoſe that the ſign which is taken from the ſound of the bones, when mov'd upon one another, is more evident in the latter, and leſs evident in the former: although in children a divulſion generally happens, and not a fracture; nor is there ſo much importance in that ſign when it is abſent, as when it is preſent.

For the extremities of the broken cervix rarely correſpond with each other; nor is it always in the power of the ſurgeon to move one againſt the other, ſo as to make a colliſion: nor can the ſound, which is generally ſlight and obſcure, be always ſufficiently heard: for which reaſon it happens ſometimes that it cannot be heard till the following day, as I have ſaid of Parey, and even that it cannot be heard till after many days, when the inflammation is at length diſcuſs'd.

3. I have ſaid above, that from the time wherein Parey had diſcover'd the caſe, the cauſes of it were not immediately enquir'd into; but that diſſections, which might ſhew ths circumſtance more evidently, were waited for. And they muſt have been waited for much longer, if they were firſt perform'd by Du Verney, as ſome are of opinion, or by Ruyſch, as is the opinion of others; or even if they were firſt perform'd by Rolfinc.

But, indeed, Rolfinc (*f*) has hinted who had done this thirty years before himſelf; I mean, Caſpar Hoffmann; who, having publiſh'd his Commentaries on the books of Galen *De Uſu Partium*, and having admoniſh'd (*g*), "that "what is thought to be a luxation, ſometimes happens to be a fracture, "that is to ſay, when the femur is broken even in the upper part of it, "where the appendix is, or in the neck itſelf," ſays, "The former Co- "lumbus admoniſhes of all appendages, book the firſt, chapter the ſecond; "the latter I have ſeen in the thigh of a cat:" and he has ſubjoin'd his obſervation of the cat, which was ſuppos'd to have ſuffer'd a luxation of the femur, from the time that he had been continually lame, in conſequence of having ſuffer'd ſome external violence when he was very young, and in which,

(*e*) De Re Anat. l. 1. c. 2.
(*f*) Diſſert. Anat. l. 2. c. 49.
(*g*) Vid. l. 3. in fin.

when diſſected, he nevertheleſs found the femur not luxated, but the neck of the femur broken; the head of the cervix even then adhering in its acetabulum.

And he has immediately added the reaſons why the humerus is eaſily luxated, and the thigh-bone with difficulty; the firſt of which is, "becauſe "the former is without this round ligament, and the latter has it:" the ſecond is, becauſe the acetabulum of the latter is more confin'd and deeper: and the third, becauſe the joint of the thigh is ſupplied, and girt around, with firmer muſcles. All which reaſons are commonly advanc'd at preſent: although Rolfinc has deſcrib'd the obſervation of Hoffman, and has omitted them: and this you will find even from the Sepulchretum (*h*), which gives you every thing that Rolfinc has upon this head; except that it, nevertheleſs, paſſes by theſe words, which ought to be interpos'd betwixt the ſcholium and the obſervation of Hoffman: "Many times we have here obſerv'd a great "miſtake, and the like has been remark'd by Hoffman."

But whether he obſerv'd it by diſſecting dead bodies, or by handling living bodies, as is ſaid of Diemerbroeck in another part of the ſcholium, you yourſelf will determine. At leaſt none of theſe authors has mention'd the remark of Parey, upon that matron, and his admonition in reſpect thereto. For it is quite another thing that is produc'd from I know not what chapter of Parey, by Rolfinc, who, when he inculcates that this epiphyſis is eaſily ſeparated in infants, and young animals, by the fault of nurſes, and from ſlight cauſes, as he proves from the boiling of bones, ſhews that he had rather profited from Columbus, than from Parey.

But Hoffman, in his poſthumous work (*i*), has univerſally confirm'd what he fornerly had taught from that obſervation of the young cat; and determin'd it to be "exceedingly true, that a fracture in the neck of the femur "happen'd more frequently than a luxation of the head of the femur, par- "ticularly on account of the ligamentum teres, which is in the acetabulum "itſelf:" although in the year 1641, Veſlingius (*k*), in writing to him, ſeem'd to contract the affair in ſome meaſure, in conſidering, for inſtance, when that happens, not only the ſtrength of the ligament, but alſo the fragility of the bones, "which in ſome conſtitutions is remarkable."

And I thought proper to write theſe things to you pretty much at large, of thoſe perſons who have made mention of the caſe in queſtion before our time, that it might appear what is to be attributed to every one; either in leading the way to, or in acknowledging, or in demonſtrating, or in enquiring into, the cauſes of the circumſtance itſelf.

From the obſervations of theſe authors, perhaps, that more ancient one of Jacobus Sylvius (*l*) does not differ; that is to ſay, an obſervation made upon a ſtone-maſon falling from a high place, and breaking his *crus*, or leg, "at "the head of the hip-bone;" and what he meant by the word *crus* is not only manifeſt in other places, but there, in particular, where (*m*) deſcribing the ligamentum teres which I have ſo often ſpoken of above, as riſing from

(*h*) Sect. hac 6. Obſ. 2. cum Schol.
(*i*) Apolog. pro Galeno, l. 2. c. 81.
(*k*) Epiſt. 25.
(*l*) Obſerv. poſt Iſagog.
(*m*) Iſagog. l. 1. c. 3.

the fundus of the acetabulum, he ſays, " it is inſerted into the head of the " crus."

4. Yet I ſhall not here, however, point out all the obſervations of thoſe who have written in our age; and what I do refer to, I ſhall refer to only in a curſory manner; as well becauſe theſe are very generally in the hands of all perſons, as becauſe the chief of them are extant in the diſſertation of Salzmann (*n*), publiſh'd in the year 1723, in which he has, if any other perſon has, inform'd us of the cauſes, on account of which the luxation of the femur is with difficulty diſtinguiſh'd from the fracture of its neck: and yet he has ſhewn, that the latter happens more eaſily, and conſequently more frequently, than the former, from the application of external violence.

Thoſe obſervations were made upon ſuch perſons as were ſuppos'd to have their lameneſs from a luxation, and not from a fracture: ſome belong to Ruyſch, ſome to Cheſelden, and others to Erndlius; ſome obſervations of Borſtius being added, with the approbation of Rau; which firſt-mention'd obſerver, having diſſected the bodies of eight perſons, that had been lame in the ſame manner, had never found a luxation, but always a fracture of the femur in its neck, as the fore-mention'd authors had done.

But Ruyſch, by whoſe authority, in particular, the caſe has begun to be confirm'd in our times, has both produc'd the cauſes of the circumſtance (*o*), together with the obſervations, and in ſeveral of them has remark'd ſomewhat peculiar; I mean, that the fragments of the cervix, which had been formerly broken, and divided into ſmall pieces, not only did not remain behind; but that, ſometimes, in the place thereof (*p*), many hard ligaments have been found, of ſome conſiderable thickneſs, and round in their figure; which not paſſing externally, but internally, connected the head of the femur with the upper part thereof: and, ſometimes (*q*), that the head has been found to be conglutinated, and form'd into one ſubſtance, with this upper part of the femur.

To which two peculiar remarks there are ſome things that may be added. To the firſt, that Salzmannus, in another diſſertation (*r*), publiſh'd five years before that which I have ſpoken of, had ſaid, that thoſe hard and thick ligaments, which Ruyſch had ſeen betwixt the head and the femur; and which he did not doubt were ſubſtituted, by nature, in the room of a cervix; were made up of the perioſteum, which being lacerated by a fracture, frequently becomes very hard and thick in that part, and is wont to put on the appearance, and perform the office, of a ligament: an example of which caſe had already been propos'd in the *Acta Eruditorum Lipſienſia* (*s*), in a certain fracture of the ulna and radius.

But, nevertheleſs, I would have you attend to this, at leaſt, that thoſe ligaments of Ruyſch did not go to the external parietes of the fractur'd bones, as the perioſteum generally does where it is, but went to their internal part. To the other peculiar remark, that is, to the obſerv'd conglutination of the

(*n*) De Luxat. oſſ. femor. &c. c. 4.
(*o*) Theſ. Anat. 8. n. 103.
(*p*) Theſ. 9. n. 74.
(*q*) Ibid. n. 44.
(*r*) De Articul. Analog. &c. c. 2. § 1. & 4. & c. 3. § 2.
(*s*) A. 1685. M. Nov.

broken bone with its head, which at other times is wont to be found ſeparately in the acetabulum, we muſt add, that when this conglutination happens; and I have known it happen more than once; it is to be attributed to thoſe bandages, whereby the femur is kept, for a very long time, preſs'd very cloſely againſt the head of the bone; and to the reſolution of the patient in keeping himſelf ſtill, and avoiding all motion.

Yet that old woman was not free from lameneſs in whom Ruyſch found a conglutination of this kind. For although, when the neck of the femur is deficient, the whole of the bone is leſs oblique outwards, and for that reaſon the limb leſs ſhort than it would have been; yet, by theſe means, the femur is brought nearer the other, and the directions of the muſcles that move the thigh and the leg are chang'd.

But even that woman was lame, of whom the queſtion is in the obſervation of Erndlius, already referr'd to; although the fractur'd cervix itſelf had coaleſc'd, by means of a callus of the breadth of a man's thumb, which was protuberant under the head of the bone; ſo that the cervix might ſeem not to be wanting; and no injury appear'd in the ligaments and the neighbouring tendons, nor any ſtate of the parts that was preternatural: ſo eaſily does a lameneſs happen after a fracture. And in proportion as that whole part of the femur, at its ſuperior extremity, wherewith the cervix coheres by its baſis, is larger and more firm than the cervix itſelf, the coalition, of which I have firſt ſpoken, is leſs difficult than this ſecond: the difficulty of which is increas'd by the ſame circumſtance that renders the fracture eaſy; I mean, by the oblique direction of the neck.

For that impulſe which the ſtrait bones of the legs, and the thighs, often ſuffer without any miſchief; as, for inſtance, in a man who falls from a conſiderable height upon his feet; the cervix of the femur can ſcarcely ever bear, by reaſon of its tranſverſe direction: eſpecially as it is very fragile, and prevented from following the motion of the femur when driven upwards, by the reſiſtance that the head meets with, in its aſcent, from the acetabulum, which is immoveable.

And theſe ſame cauſes, when the muſcles draw the femur upwards, disjoin and unglue the parts of the broken cervix, which are again contiguous to each other, and beginning to coaleſce. And the moſt ancient authors were not ignorant of this poſition of the cervix; therefore, Hippocrates (*t*) has expreſsly ſaid, "that the head and neck of the femur are naturally oblique." And Ariſtotle (*u*), when he ſaid that the femur was *biceps*, or double-headed, had not the ſame meaning, that Niphus (*x*) has given to him in his interpretation of the paſſage, that is to ſay, "that there is one femur on the "right ſide, and another on the left;" for this he had ſufficiently ſaid already; but having in his eye, on the one hand, the large trochanter, and, on the other, the cervix in the upper part of the femur, he has aſſerted that the bone is double-headed.

Why it is thus divided, and has a neck running almoſt tranſverſely, is far more manifeſt than why the neck ſhould have ſo fragile a ſtructure. For it

(*t*) L. de Articul. n. 63. apud Marinell.
(*u*) De Hiſt. Animal. l. 1. c. 15.
(*x*) In Expoſ. ejus loci.

is common to ſome other bones alſo, and is not peculiar to this only, as ſome learned men ſay, to ſend out certain parts which make an angle with themſelves; as, for inſtance, the ſcapulæ, and the lower jaw.

But the parts ſent out from theſe, are of a far more firm ſtructure, if compar'd with the bones from whence they are detach'd, than the neck of the femur when compar'd therewith. Nor is this cervix ſo much thicker than the bone to which it is added, that we can ſay equally thereof, as of the extreme parts of the longer bones, that they reſiſt breaking, by their thickneſs; if not by their ſtructure.

5. But what happens in moſt perſons in whom the cervix is broken, (for on account of the impediments, which I have mention'd, it is very rare that it does coaleſce), we ſhall ſee preſently, when we go on to that other diſſertation of Salzmannus, and at the ſame time point out thoſe obſervations which he could not relate in the diſſertation hitherto ſpoken of: yet not all; for we know, that many are extant in other authors; but make mention of one or two only, which were in my hands while I was writing on this ſubject.

That experienc'd, and induſtrious ſurgeon, Gregory Barbett, as well as thoſe whom we omit, ſaw, as you have it in his *Apologia* (*y*), which he, with great kindneſs, ſent to me; the ſame thing in a woman, of eighty years of age, that was diſſected by him; in whom, although, until the fourteenth day after ſhe had fallen, the injur'd limb had not been ſhorter than the ſound one, the neck of the femur was nevertheleſs broken: could this be, as he ſuſpects, becauſe it was not quite broken in the beginning; and, therefore, reſiſted, for ſo long a time, the muſcles which mov'd the femur?

Yet the ſame author produces another obſervation, of a man who had been lame for a long time, from a violent kick upon the ſame joint of the femur. In him he found the femur luxated; ſo that with its head, it lay contiguous to the back of the os ilium, no traces of the ligamentum teres being left behind: the orbicular ligament being quite disfigur'd, and the acetabulum almoſt deſtroy'd.

And Salzmannus himſelf; who confeſs'd ingenuouſly, that neither of the caſes, which he treated of with great ſkill, and ſeparately, in thoſe two ſeparate diſſertations, had as yet happen'd to be ſeen by him in diſſection; could, five years after, affirm, that both of them had been met with by him, in the mean time, in ſuch a manner, that in regard to the firſt, he aſſerted, "it "happen'd to him to find a fracture of the femur, more frequently than a "luxation:" and as to the ſecond, that he could produce two examples of luxations of the femur, in one of which, the head of that bone, without a fracture of the neck; and in the other, the cervix (*a*), broken off from the head, which had been conſum'd and deſtroy'd, "lay againſt the external "part of the os ilium, a little above the acetabulum, and, by attrition, "which had ſubſiſted for a long time together, had form'd to itſelf a certain "cavity, and a kind of ſuperficial ſinus, from whence both of the ſubjects,

(*y*) Apologia di due Cure.

(*z*) Vid. in Comment. Imp. Acad. Petropol. Tom. 3. Obſ. Anat.

(*a*) Vid. etiam Act. N. C. Tom. 2. Obſ. 101.

" notwithſtanding the foot on that ſide was ſhorter, could walk in ſome " meaſure; though not with facility, nor expedition."

Nor indeed does the firſt of theſe two examples, nor the obſervation, which he himſelf had produc'd in the diſſertation (*b*), from the Berlin tranſactions, nor any other obſervations of this kind, ſimilar to theſe which I juſt now took notice of, in the ſecond place, from Barbett, and which, as he ſays with juſtice, are " not frequent;" run counter to his opinion, which ſufficiently appears from the very title of the diſſertation itſelf; " De luxatione oſſis fe- " moris rariore, frequentiore colli fractura."

For as more examples are extant of the latter, than of the former; or, at leaſt, in adults, and from an external cauſe; ſo that Ruyſch (*c*), affirm'd a luxation to happen " rarely," and Rau (*d*), " very rarely;" ſome contrary examples will not at all be deſtructive of the cautious and prudent opinion of Salzmannus; and if there were none of theſe examples, his opinion, which pronounces the luxation to be " more rare," would of courſe fall to the ground.

And indeed, when he enumerates the cauſes (*e*), on account of which this ſometimes happens; as, for inſtance, the well known laxity of the ligaments from the gout; the paralyſis of the ſurrounding muſcles and tendons; the ſize of the acetabulum being naturally too large, or the head of the femur being naturally too ſmall; as likewiſe a fracture in the margin of the acetabulum; or a defect of it; or, in fine, tumours that had ariſen within the acetabulum: it is eaſy for us to conceive, that where any one of theſe cauſes is not ſo conſiderable, as to be able, of itſelf, to thruſt the head of the femur out of the acetabulum as yet; if any external violence then happen to be applied, it will not be difficult for a luxation to follow: and the ſame thing may take place in thoſe likewiſe, who happen to have their ligaments naturally very lax, or in whom the ligamentum teres, (which is a rare obſervation of Nicolaus (*f*)) is entirely deficient.

6. Now ſince there are ſome obſervations taken notice of, wherein it is ſhown what has happen'd in thoſe perſons, whoſe femur, when broken, or wholly prolaps'd out of its ſeat, could not be reſtor'd thereto; we muſt ſubjoin others which relate to the ſame ſubject.

And as John Salzmannus, in that diſſertation which is referr'd to above, and which is entitled, " Of analogous articulations that ſucceed to the frac- " tures of bones;" treats of this ſubject in general, he has many things which you will be very willing to examine, and transfer hither; but he produces obſervations, the greateſt part of which, not only relate to other bones, but were made in the living body, by the judgment of the touch only, and not taken from diſſected bodies, where the eye could judge alſo: of thoſe therefore, which we principally enquire after here, he has none; unleſs you chooſe to conſider that of Ruyſch, wherein, inſtead of the cervix, ſome thick ligaments join'd the head with the upper part of the femur, as relating to the preſent ſubject; for thoſe which are from Diemerbroeck, as I have obſerv'd above (*g*); do not relate to anatomical inſpection.

(*b*) c. 2. § 7.
(*c*) Theſ. Anat. 8. n. 103. § 2.
(*d*) Vid. Diſſert. Salzman. modo cit. c. 4. § 2.
(*e*) Ibid. c. 3. § 5.
(*f*) Dec. illuſtr. Anat. Obſ. 7.
(*g*) n. 3.

But

But that double obſervation, on one woman, which I have read in an oſteological diſſertation (*b*), publiſh'd under the auſpices of the very celebrated Gaubius, and ſent by him to me, with great kindneſs, does relate to this queſtion. Both the thigh-bones had fallen out of the acetabulum. The head of the right femur was ſound; that of the left entirely conſum'd by a caries.

Therefore, as a new acetabulum was ſeen correſponding to each of thoſe heads, in each of the oſſa ilia; the left acetabulum was hollow'd out but ſlightly, the right very deeply; and the old acetabula were almoſt obliterated: ſo that it might be eaſily ſuppos'd, that theſe old ſockets, being depriv'd of the heads of the bones, which, by their bulk, preſſure, and motion, preſerv'd them, had almoſt loſt their cavity: and that thoſe new ones were thus unequally hollow'd out, becauſe the left head being deſtroy'd, before it could be preſs'd ſufficiently cloſe, the body was ſupported by the head of the bone, on the right ſide, which was ſound; and by preſſing the right os ilium, ſtill more and more, againſt this head, had caus'd the os ilium to be hollow'd out thereby.

And I have obſerv'd, that ſomething ſimilar to this was ſeen formerly by Parey; as you will learn from a certain paſſage of his (*i*), which I think it worth while to copy to you here. His words are, "it happens, not uncommonly, that excrementitious humours fall with ſuch violence upon the cavity of the hip-joint, in the caſe of a ſciatica, that the ligaments being relax'd, they eaſily puſh the head of the femur out of its place, never to be reſtor'd, if it continue diſplac'd for ſome time: becauſe a humour, which has in the mean while fallen into that cavity, concretes by delay into a kind of ſtony ſubſtance; and that joint of the thigh has form'd a new cavity for itſelf by attrition, in the neighbouring bone: and the lips of the true cavity, which are cartilaginous, have become more ſtreighten'd, and more depreſs'd."

Moreover, theſe obſervations and others, if there are any, when the femur, either ſound or broken, has lain upon the external part; obſervations, that is to ſay, of a new acetabulum being hollow'd out, ſometimes, in the os ilium, without diſſections of bodies, the ſucceſſors of Hippocrates could not have been ignorant of, any more than Hippocrates himſelf, in that paſſage of his book *de articulis* (*k*); which, if I quote it according to the verſion generally follow'd after Cornarius, you will underſtand it leſs eaſily, in my opinion, than if I produce it from the verſion of Felicianus, join'd with the interpretation of Galen.

Thus then Hippocrates, when ſpeaking of the head of the femur being luxated. "Yet when the joint has made ſome delay in the fleſhy parts, whereinto it has fallen; and the fleſh has contracted a lentor; it becomes free from pain in proceſs of time. And when it becomes free from pain they can walk without a ſtick, if there be no other impediment: and can ſupport the body upon the injur'd limb."

(*b*) De modo quo oſſa ſe vicinis accommodant partib. § 42.

(*i*) Oper. l. 17. c. 22.

(*k*) n. 63. apud Marinell.

And

And thus it is that Galen interprets theſe words (*l*): "By metonymy he "has made uſe of the word τριβον, or delay, from the places which, by "the long continuance of travellers, are become beaten and familiar. And "this is the purport of his diſcourſe. When the head of the femur, which "has been diſlodg'd, from its proper ſeat, into the external part, is fix'd in "the fleſh: thoſe who are thus affected ſuffer pain, in the beginning, from "the compreſſion; but afterwards, in proceſs of time, the fleſh grows cal-"lous in this part, juſt as the hands of labourers do. And when this is "the caſe, the place becomes ſimilar to an articulation; the head of the fe-"mur making uſe of this beaten path, or bed, as it before made uſe of the "acetabulum of the hip."

And after having ſaid how "a ropy and mucous kind of humour" is left there, after inflammation; "that," ſays he, "is very convenient for the "motion of the head of the femur. For, by reaſon of this humidity, they "make uſe of this path, or bed, as if it were a joint." From the compariſon, therefore, of theſe things, you plainly perceive what thoſe ancients conjectur'd in this affair; and, moreover, what was ſhown by the diſſection of morbid bodies.

And all theſe things I have premis'd, by a long diſcourſe in the very beginning of this letter, that I may clearly ſhow, in a few words, to what purpoſe each of them tend; and which of them are confirm'd by the obſervations preſently to be produc'd. The firſt of theſe obſervations is from Valſalva.

7. A woman, of ſixty years of age, who labour'd under a difficult reſpiration, and a cough, had her os femoris luxated by a fall. A continual fever then came on: which encreas'd the difficulty of breathing, and carried off the woman on the eleventh day.

The belly being laid open, the liver was found to be hard: and in the gall-bladder were many calculi.

On opening the thorax, the lungs appear'd to be variegated with large black ſpots; both internally and externally. On the right ſide was about a pint of water; on the left ſide of the thorax was a little only. The right auricle of the heart was dilated, and fill'd with a polypous concretion: and in the left ventricle was another, which was produc'd, from thence, into the veſſels.

At length, as to what relates to the femur itſelf, it was found to be really luxated; in conſequence of that ligament being relax'd, whereby the head of the femur is connected to the acetubalum of the os innominatum.

8. Thoſe ſymptoms which had preceded the luxation, the difficult reſpiration, and the cough, may be accounted for from the dilatation of the auricle, from the water found in the thorax, and from the hard liver. The fever, which ſucceeded the luxation, may be aſcrib'd to the pain and irritation which the luxation brought on the neighbouring parts: and from the febrile motion of the blood, affecting the lungs, and the other viſcera, may

(*l*) in l. Hippocr. de Artic. Comment. l. 3. n. 93.

we account for the difficulty of breathing being encreas'd, and for death.

But as to the luxation happening without a fracture of the cervix, that is to be attributed to the laxity of the ligamentum teres, as it is call'd; which was perhaps naturally leſs firm, and ſtrong than uſual, and therefore already diſpos'd to be more relax'd from the fall, and eaſily to give way. Nor is this obſervation contrary to the opinion of Ruyſch; as he has affirm'd, that this rarely happens, as I have ſaid above (*m*); but has not, as ſome pretend, denied that it ever happens.

But now take theſe two obſervations of the cervix being fractur'd; the firſt of which was made by the pupils who practiſe diſſection with me, and the other by myſelf.

9. A ruſtic man, having fallen down from a tree, was ſuppos'd to have luxated the femur. The ſurgeons having endeavour'd to replace this bone with the more diligence, as they thought they could, with their hands, perceive the head of the bone which had been diſlodg'd; it happen'd, accidentally, that theſe young men, who had, more than once, heard me aſſert, that a fracture of the cervix happens much more eaſily, from external force, than the luxation of the femur; and mention in what manner the great trochanter had impos'd upon Parey himſelf (*n*), for the head of the femur; did not ſcruple to interpoſe their ſuſpicions, but could not withdraw the ſenior ſurgeons from their prejudg'd opinion.

Therefore, about the end of two months, a diſorder of the thorax having ſeiz'd upon the man; who had not as yet riſen out of bed; and carried him off by a kind of ſuffocative catarrh, before the end of the year 1727, they were reſolv'd to determine their doubts by diſſection, and ſee whether they or the ſurgeons were deceiv'd.

The upper part of the os femoris being laid bare, and the acetabulum into which it is inſerted, they clearly ſhow'd to all the ſtudents of anatomy and ſurgery who were preſent, that the cervix was broken through in the middle; one half of it adhering to the head, which remain'd firmly fix'd in its acetabulum, and the other to the os femoris, near to the trochanter; which, in the man's life-time, had been taken by the ſurgeons for the head of the femur.

But how many, and what kind of calculi, were found by them in the gall-bladder of this man (who was not icteric) and brought to me; and what experiments I made thereupon; I ſhall not repeat in this place, as I have written to Schroeckius upon the ſubject; and he has publiſh'd the letter (*o*).

10. A woman, about forty years of age, of a fat habit of body, and lame on the left ſide, had lately receiv'd a violent contuſion upon the lower ribs; and being ſeiz'd with a fever, was carried off thereby within fifteen days, in the year 1742: at which time, as I was teaching anatomy in the college, the carcaſe was carried thither from the hoſpital. Where I obſerv'd nothing peculiar in regard to that contuſion.

(*m*) n. 5. (*n*) ſupra, n. 2. (*o*) Act. N. C. Tom. 2. Obſ. 167.

But

But I made other remarks there, and in particular ſuch as rela e to the cauſe of lameneſs. And theſe, after relating ſome appearances obſerv'd in the thorax, and belly, I will accurately deſcribe to you, as I then demonſtrated them to the great number of auditors who were preſent.

The right auricle of the heart, and the inferior vena cava, contain'd polypous concretions, not without a great quantity of white ſubſtance: and concretions of the ſame kind were contain'd in both the ventricles; that in the left being much the largeſt. From the curvature of the aorta aroſe not three, but four arteries; for the left vertebræ did not ariſe from the ſubclavian, but betwixt that and the carotid of the ſame ſide.

In the belly the genital parts, the kidnies, and the ſanguiferous veſſels, offered theſe things which were worthy of remark. The ſurface of one of the teſtes was very unequal. The oſculum uteri was ſurrounded with no corona; ſo that there was not any protuberance within the vagina. And the kidnies, in proportion to the middle-ſiz'd ſtature of the woman, were both of them longer than they generally are: the left was ſomewhat hollow'd out, by a cicatrix, on its external ſurface, and at the lower extremity; and the circumference of this cicatrix approach'd, in ſome meaſure, to the figure of a circle; the diameter of it being equal to a finger's breadth; and the whole cicatrix being, as I ſuppos'd, the remains of an hydatid, which had been formerly partly buried in the ſubſtance of the kidney, and partly prominent therefrom.

The trunk of the large artery was thinner than uſual, and did not ſend forth the ſpermatic artery; but this came out from the emulgent; nor did it give out the lumbar arteries in the uſual manner; nor was the left iliac of an equal length with the right, but a third part ſhorter.

And I beg of you to attend to this circumſtance, as we now go on to thoſe things which related both to the cauſes and to the effects of lameneſs. For on the left ſide the woman had been lame, as I ſaid; that limb was four inches ſhorter than the other, and had the calcaneum turn'd towards the outſide; yet was not leſs fat than the right, but even ſtill thicker, though this was owing to an œdematous tumour.

The iliac vein therefore, on the right ſide, was wider than it naturally is; but the left, and its branches, were ſo thin, ſlender, and pale, that being ſurpriz'd at an appearance which I never ſaw before, I open'd the trunk of the vena cava at its lower part. Which being done I was ſtill more ſurpriz'd. For inſtead of the orifice of that iliac vein I found a line which was a mark of its coalition; in which line were two or three ſmall orifices communicating with the iliac vein.

Having cut into this vein in a longitudinal direction, and having ſeen, beſides filaments of a polypous nature, a kind of faſciculus of fibres protuberating internally; I ſoon after eaſily obſerv'd that the parietes of the vein had coaleſced with each other on one ſide; and by theſe means repreſented that faſciculus, the appearance of which entirely vaniſh'd by drawing the parietes aſunder with both hands: nor was the ſeparation difficult.

But then laying bare the crural arteries and veins, from the belly quite to the ham, in both limbs, no difference appear'd in the arteries; yet the vein which was aſſociated with the left artery, appear'd to be at leaſt a third part

narrower than that of the right ſide: and although it had not parietes which were folded together, and beginning to coaleſce, yet it had, betwixt its coats, a kind of black blood as it were, and perhaps a real blood; but ſuch as to all appearance ſeem'd to have been concreted a long time before.

Having examin'd theſe things ſufficiently, I enquir'd into the cauſe of the lameneſs, by laying bare the articulation of the os femoris with the os innominatum: and the os femoris was found to be depriv'd of its neck and head. As to the head of it, this remain'd fix'd in its acetabulum, though the cartilage, wherewith both of theſe parts were incruſted, was corroded here and there: and indeed the bony ſubſtance of the head of the femur, both where it was turn'd to the left parietes of the acetabulum, and where it had formerly coher'd with the cervix, was not quite ſound and entire.

And as to the cervix, no traces of it remain'd, if you excepted ſome bony fragments, adhering to very thick ligaments, into which the capſular ligament ſeem'd to have been chang'd; at leaſt theſe ligaments were produc'd from the margin of the acetabulum to that part of the ſuperior extremity of the femur, from whence the cervix formerly began, and connected the femur to that margin. And in the cavity which lay betwixt them, in the place of the cervix, was a thickiſh matter of a fleſhy colour, but brown and dirty; yet not fœtid, nor in great quantity.

Beſides theſe appearances, the os innominatum, on the left ſide, was more prominent forwards than the right; ſo that it was natural to ſuſpect that the ſame external violence, which had broken the cervix of the os femoris in this woman, when ſhe was an infant, or when ſhe was very young, had likewiſe luxated the os innominatum.

11. If you compare theſe two obſervations with each other, you will eaſily come into this opinion, that Ruyſch's (*p*) finding no remains of the fractur'd cervix, is to be attributed to the length of time, and to the frequently-repeated agitations and frictions of the fragile extremities of the broken cervix one againſt another: and beſides theſe to the eroding power of the acrid particles, diſtilling from the injur'd and vellicated membranes, and bringing on a caries by ſtagnation.

But as to what I have taken notice of, in regard to the perioſteum being lacerated by a fracture (*q*), I mean that it frequently becomes harder and thicker than natural; you perceive, from the ſecond obſervation, that the ſame thing happens to ligaments. And as to what is ſaid, in the ſame obſervation, of the extenuation of the iliac veins that correſponded to the injur'd limb, I would have you compare it with the diſſection of another lame woman that I have already deſcrib'd to you (*r*).

For you will find that the iliac veſſels, going to the lame limb, were thinner than uſual. Yet you will not only find it extenuated to ſuch a degree through the thigh, but will not find it contracted in the belly by the coalition of the parietes on one ſide; nor yet almoſt ſtopp'd up at the orifice by which it opens into the vena cava. For it is a very rare appearance, and not eaſily to be underſtood, the limb from which it return'd labouring under an œdematous tumour indeed, but yet being alive; although we

(*p*) ſupra, n. 4. (*q*) Ibid. (*r*) Epiſt. 46. n. 17.

ſuppoſe it not to have been reduc'd to this ſtate for a long time before.

However, the os femoris, in this woman, could not have receded far from the acetabulum, by reaſon of the connecting ligaments. And the man, of whom I ſpoke before her, having always lain in bed, had no occaſion to make uſe of, and to ſtand upon, that limb. Now, therefore, give me leave to tell you what appearances I found in another woman, and in another man alſo, who had for a long time had the head of the os femoris luxated, and not replac'd; and had for a long time borne upon the limb.

12. A lame old woman was now very near to her eightieth year, when being ſeiz'd with an apoplexy, ſhe died not long after; yet not ſo much from the apoplexy, as from the effect of it, which was but little attended to. For as the power of the bladder, by which it both retain'd and diſcharg'd the urine, was loſt by paralyſis; the aſſiſtant women, deceiv'd by the continual dripping, thought that as much urine was diſcharg'd from the bladder, as was continually flowing down into it: and the old woman herſelf either could not feel, or could not make known, this very great diſtenſion; ſo that it happen'd to her, as it has happen'd to others from the ſame fallacy (*s*), that ſhe died very ſoon.

For the body being brought into the theatre, that I might begin to teach anatomy from thence, in the month of January of the year 1735, that cauſe of death came firſt into view, and perverted the order of teaching. For when the belly was open'd, the bladder appear'd to be ſo diſtended with urine, as to reach to the navel, and to occupy both the ilia; the inteſtines being driven upwards in ſuch a manner, that on one ſide they forc'd the liver and diaphragm up very high, and on the other ſide puſh'd the ſpleen and the ſtomach towards the middle of the epigaſtrium.

But the viſcera were all of a green colour, and had a very putrid ſmell; ſo that I order'd them all to be immediately taken out of the belly, and buried in the ground. What appearances therefore I obſerv'd in the thorax, the neck, and the limbs, that were preternatural, I ſhall add here; for having, in the mean while, got better-bodies, we did not touch the head.

The pericardium was connected with the anterior ſurface of the great veſſels, and of the heart: with the former by filaments, but with the latter by itſelf; and that for as great a ſpace as two inches would have cover'd, both in length and breadth. And this circumſtance made me enquire, from him who had been the phyſician of this apoplectic woman, whether her pulſe had been, in any ſenſe, peculiarly irregular, and, in particular, whether they had intermitted; which he immediately and expreſsly anſwer'd in the negative.

The great artery began to become rough, on its internal ſurface, at a ſmall diſtance above the valves; as if from a prominence of fibres drawn in a longitudinal direction, and disjoin'd from each other here and there: this roughneſs was extended for two inches in length, and ſomewhat leſs in breadth. The thyroid gland, beſides being very large, had its anterior ſur-

(*s*) Vid. Epiſt. 42. n. 22. ubi & hæc hiſtoria promittitur.

face

face alſo prominent with certain globular bodies as it were, or at leaſt in ſome places.

The left of the lower limbs, on which ſide the woman had been lame, was turn'd with the knee towards the inſide, and with the heel towards the outſide: it was alſo ſhorter than the right, and if you excepted the back part of the foot, in which part it ſeem'd to be pretty thick, was very much extenuated, and moreover deform'd with a large cicatrix, as if from a large ulcer which had occupied the external part of the fibula longitudinally; whereas the right limb had a very good appearance, was well nouriſh'd, and furniſh'd with ſuch wide veins, that I never remember to have ſeen wider in any lower limb whatever.

And as this was a proof of a greater quantity of blood flowing into that limb, in proportion as leſs flow'd into the oppoſite, ſo it made me regret having order'd the viſcera and veſſels of the belly to be buried; as it was now no longer poſſible to ſee how the left iliac vein appear'd near to the cava.

Finally, the ſuperior joint of the left os femoris being laid bare, we found the head of that bone not ſo globular as it generally is, but become almoſt flat as it were, and ſomewhat enlarg'd; nor was it furniſh'd with any round ligament by which it could be connected. It was receiv'd into an acetabulum leſs hollow than it naturally is, yet incruſted with a cartilage. And there was at the anterior border of this acetabulum, another cavity much leſs than itſelf: a cavity of which kind was no where before the acetabulum of the right os femoris.

Moreover, the acetabulum of the left, although if you referr'd it to its own os ilium, that is, to the os ilium of the left ſide, ſeem'd to be neither lower, nor higher, nor more poſterior than that of the right, if you compar'd this alſo with its own os ilium; yet it was more diſtant from the commiſſure of oſſa pubis than the acetabulum of the right ſide. For the left os ilium was alſo much more diſtant from the ſame commiſſure than the right os ilium.

13. Thoſe things that relate to the connexion of the heart and pericardium, join'd with no intermiſſion of the pulſe, you will refer to that place (*t*) where we have already treated of connexions of this kind, and their effects.

But as to what relates to the acetabulum, in which the head of the femur was receiv'd, I do not doubt but by comparing this obſervation of ours, with thoſe of the celebrated men taken notice of above, you will readily acknowledge that this had been hollow'd out by the head of the bone, which had long before fallen out from its natural acetabulum; the veſtiges of which were ſtill remaining in that very near, anterior, and much leſs cavity.

For as to the new acetabulum being leſs deep than the natural acetabulum is, and the head of the femur being inclin'd from a globular to a flat figure; you very well underſtand, from theſe marks, that while one bone was preſs'd againſt the other by its weight, or forc'd by the motion of the muſcles, the

(*t*) Epiſt. 23. n. 18. (*u*) n. 5. & 6.

one was mutually rubb'd by the other, and depreſs'd; ſo that by this means the acetabulum was hollow'd out, which if nature itſelf had prepar'd, would not only have been form'd deeper and nearer to the commiſſure of the pubes, but the head of the bone would have been globular, and connected by the ligamentum teres.

For as to its being incruſted with a cartilage, the cartilaginous nature perhaps had not been, as yet, chang'd into a bony nature in that part when the excavation was begun; ſo that it was not ſuperinduc'd afterwards, but only preſerv'd.

As to that other cavity, however, which was neareſt to the commiſſure of the pubes, being the old acetabulum, and prepar'd by nature itſelf formerly, this is clear from the ſituation of it; nor does the ſmallneſs of it contradict the ſuppoſition: whether, as it perform'd that office in the beginning of life, it never was requir'd to be of a larger ſize; or whether, as we frequently ſee in the ſockets of the teeth, upon taking away the bone which was before inſerted, the bony ſubſtance around it increaſes, and fills up, or nearly fills up, the ſinus: and this I alſo have ſeen in a lame man, whoſe hiſtory I promis'd to compleat in this place.

14. The wool-comber, therefore, whoſe mortal wound I have deſcrib'd on a former occaſion (*x*), was lame on the right ſide, as I have there ſaid. This man being born with an equality of both lower limbs (for of one who was well known I could learn the circumſtances I enquir'd after, though I have endeavour'd at it in vain in regard to others very frequently) his mother obſerv'd, when ſhe was taking him out of the cradle while he was yet very young, and even in the firſt months of his life, that he had a pain in the right limb; whether ſome external accident, unknown to her, had brought it on, or ſome internal cauſe.

After this pain, that limb then became ſhorter; ſo that when the boy began to walk afterwards, it was ſurprizing to nobody that he ſhould be lame. And by habit he gain'd an eaſy and expeditious method of walking, notwithſtanding his lameneſs.

The diſeaſe of the joint, from whence the occaſion of another diſorder, though but inconſiderable, had ariſen, in my opinion; that is to ſay, a diſorder which had incurvated the ſpine of the thorax, ſomewhat to that ſide, while the man endeavour'd to incline the weight of his body to the left limb, which was more firm; the diſeaſe of the joint, I ſay, on the left ſide, appear'd in the following manner.

The acetabulum, which nature had prepar'd in its uſual ſituation from the original formation, remain'd only in one half of it, and that anteriorly: and in the fundus thereof was a kind of ſubſtance of a reddiſh, but pale colour, ſo as to ſeem morbid; and if you touch'd it, you would ſuppoſe it to be not of a ligamentous, but, in ſome meaſure, of a glandular nature.

The other half part of the acetabulum was fill'd with a bony ſubſtance, and was, beſides, cover'd over with a bone in ſome meaſure round; into which the neighbouring ſurface of the os innominatum had grown out. Above this old acetabulum was, on the external ſurface of the os ilium,

(*x*) Epiſt. 54. n. 46.

another

another acetabulum as it were, conſtructed of a white firm ſubſtance, and very ſimilar to that whereof the ligaments are conſtructed; a border being moreover added, into which it was prominent, not only on the anterior, but alſo on the ſuperior part; and which was of a middle nature, betwixt cartilage and ligament.

This ſurface of the acetabulum was ſmooth, if you excepted one place therein, which was lower than the other part; and was fill'd up by a reddiſh, and not very ſmall, ſubſtance, that was eaſily known to be a mucilaginous gland. Into this acetabulum the head of the femur was receiv'd, which was furniſh'd with no ligamentum teres, as uſual, nor endow'd with its wonted magnitude, form, or ſmoothneſs. For where it began to aſcend from the cervix, there none of theſe properties was wanting. But after it had proceeded thus for ſome little way, it was depreſs'd, and ſhow'd the bony ſubſtance depriv'd of its cartilage: yet this bony ſubſtance appear'd firm on the upper part, hard, and of a white colour; but granulated, juſt as we frequently ſee the ſurface of calculi of the urinary bladder to be.

15. If it ſeem'd ſurpriſing to you, that, in the old woman of whom I ſpoke juſt now (*y*), the new acetabulum did not want a cartilaginous cruſt; it will perhaps ſeem more wonderful that, in this man, it did not want a mucilaginous gland: not to mention the border, or ſupercilium, as it is call'd, of the ſame kind with that wherewith the natural acetabulum is furniſh'd.

Without doubt many things are form'd whoſe mode and ratio of formation are very obſcure. Nor does it fail to excite admiration, that the old acetabulum, in ſo long a time, was not more fill'd up at leaſt, if not entirely obliterated: and it is alſo ſurprizing, that, as the bones were tender, the new acetabulum itſelf was not hollow'd out into the bones, but was even made up of a ſubſtance which may ſeem to agree more with the opinion of Hippocrates and Galen (*z*), than with the obſervations of later authors.

But it is my buſineſs to deſcribe, with the utmoſt fidelity, thoſe things that I, and all who were preſent, perceiv'd with our hands and our eyes; whether they are of a ſurprizing nature or not: and it is your buſineſs to obſerve, that the loſt uſe of limbs is repair'd by nature, in more than one way: and although the method diſcover'd by the more modern authors may be true in other bodies, it does not therefore follow, that the method which the more ancient authors had hinted, can never happen in any.

But if you ſtill deſire other examples of analogous articulation, as it is call'd, either that you may compare them with thoſe which are given by us, or that, at leaſt, you may have more to join to the Sepulchretum; read over attentively the very learned diſſertations of Saltzmann, and other obſervations of other perſons, and of his alſo, which I have referr'd to above. And to theſe join thoſe that are extant in the writings of thoſe celebrated men Guttermann (*a*), Schlitingius (*b*), and Ludwigius (*c*); and if you deſire to know of a new articulation, made from a luxation in the upper limb alſo, that of Henry Albertus Nicolaus (*d*).

(*y*) n. 12.
(*z*) Supra, n. 6.
(*a*) Act. N. C. Tom. 3. Obſ. 105. in fin.
(*b*) Commer. Litter. A. 1741. Hebd. 1. n. 2.
(*c*) Prog. de Collo Femor, &c.
(*d*) Dec. Obſ. illuſtr. Anat. Obſ. 6.

And

And not to recede from the lower limb, whereof we are at preſent ſpeaking; in the ſecond and third of theſe authors, and in like manner in Platner (*e*) and others, you will find a great number of remarks relating to the fracture, or luxation, of the thigh at its upper part; and the latter of theſe ſometimes from external force, ſometimes from an eroſion of the ligaments, and at other times from laxity.

From eroſion, for inſtance, as in the caſe publiſh'd at Hall, in the year 1742 (*f*), and in others before propos'd by Mauchartus (*g*), and by Schulzius (*h*); and from laxity, as in the example of the celebrated Boetticherus (*i*), than which you will not eaſily find one more extraordinary; for the ligaments, of which we are ſpeaking, were ſo relax'd, in conſequence of a peſtilential ſciatica, that "they made both the feet longer to the meaſure "of a whole ſpan, than they had been in their natural ſtate:" which is indeed ſurprizing; but another circumſtance ſtill more ſo; I mean that the patient was perfectly cur'd, "ſo that ſhe could walk again, after that, freely, and "without any inconvenience."

Finally, you will alſo add to the number, that luxation which is ſpoken of by Petit the ſurgeon (*k*); which did not happen ſo much from an external cauſe, as from an injury brought thereby upon the mucilaginous glands of the acetabulum: ſo that the mucilage, being ſecreted in greater quantity, and relaxing the ligamentum teres gradually, or breaking it, forc'd the head of the bone out of its cavity, after a long time, though not immediately.

16. Thus far you have heard of the more conſiderable diſeaſes that we have met with in the upper joint of the thigh. Nor was that inconſiderable which was obſerv'd in a lame woman, whoſe hiſtory I defer to the next letter, in which the gout will be treated of (*l*). There are alſo ſome more ſlight diſorders, with regard to which, as they have been ſeen in lame perſons, we muſt not here fail to ſpeak, and endeavour to lay open their nature.

17. An old woman of Tuſcany was ſo lame, from a contuſion of the coxendix, that ſhe was oblig'd to confine herſelf to bed for a long time. A pain of the whole body came on; and, from her long-continued poſture, a gangrene about the buttocks. Therefore gradually ſinking, and becoming weak, ſhe died about the beginning of March in the year 1744, in the hoſpital at Padua.

Although the body of this woman was of uſe, in order to take notice of, and demonſtrate, to the pupils, many parts in their natural ſtate, which are foreign to the preſent purpoſe; yet in doing of this I did not fail to remark ſome things which related more to the preſent occaſion.

In the belly, the right lobe of the liver, on its upper and convex ſurface, and from the poſterior to the anterior part, was hollow'd out into ſo deep a ſulcus, that it would admit the finger; nor were other ſulci wanting more to the right hand than this: and if theſe kinds of ſulci were found in women

(*e*) Inſtit. Chir. in not. ad §. 1193. & 1194.
(*f*) De Amput. Femor. non cruenta § 18. ad n. 6.
(*g*) Eph. N. C. Cent. 9. Obſ. 34.
(*h*) Act. N. C. Tom. 1. Obſ. 235.
(*i*) Eorund. Act. Tom. 7. Obſ. 21.
(*k*) Mem. de l' Acad. R. des Sc. A. 1722.
(*l*) Epiſt. 57. n. 2.

only,

only, there might be room for heſitation, whether they were not the effects of having worn very ſtiff ſtays, which women are wont to do while they are young.

The liver itſelf ſeem'd to be made up, both internally and externally, of very ſmall and white corpuſcles, which were intercepted by very ſlender interſtices, of a brown or reddiſh colour inclining to yellow. The gibbous ſurface of the ſpleen was white, as if from a kind of thick cruſt; the flat ſurface was black.

The teſtes were very much contracted, and depreſs'd into a kind of thin lamina. The orifice of the uterus was large, in ſome meaſure triangular, and ſurrounded with no protuberating ring. The whole internal ſurface of the fundus was black and gangrenous.

The thorax was encompaſs'd with twelve ribs on the right ſide; but on the left with eleven only. For the firſt and ſecond of theſe conſiſted, in the chief part, of no more than one bone: that is to ſay, theſe two, having come out ſeparately from the vertebræ, by their little heads, had ſcarcely paſs'd the length of an inch but they became one broad bone; in which there was not the leaſt appearance of there ever having been any diviſion.

That bone, when it had gone ſo far, as to be diſtant from the ſternum about the ſpace of three inches, ſent, from its upper border, a round oblong cartilage into the ſternum; which cartilage was ſcarcely equal to half the breadth of a little finger: and the bone, being then contracted in its other part, yet ſo as to retain its breadth; which was not leſs than that of the firſt right rib; and leaving a ſmall ſpace betwixt itſelf and that round cartilage, was join'd to the ſternum by another proper cartilage.

In the pericardium was ſome quantity of water. The right auricle of the heart was diſtended with blood. The heart itſelf, even when the fat was remov'd from it, was much larger than it ought to be; and not only on account of the ventricles being wider than uſual, and particularly the left, but alſo on account of the parietes of this laſt-mention'd ventricle being much thicker than when of their natural ſize.

Part of one of the mitral valves was become bony; or at leaſt had a little bone ſubjoin'd to it, which was made up of many bones, as it were, and for that reaſon unequal, of a roundiſh figure, and, in its magnitude, equal almoſt to the point of the little finger. In the heart were ſome polypous concretions, and a great quantity of black blood: and the ſame kind of blood, though more fluid, flow'd out, in ſeveral places, from the larger veins, when cut into.

Finally, upon examining the upper joint of the lame limb, I found the ligamentum teres, which has ſo often been mention'd, to be leſs thick and firm therein, than it naturally is; and to be almoſt univerſally ting'd with a pale redneſs.

18. Another old woman, who was already crooked from age, and who was wont to walk as if ſhe were lame, had lately fallen down ſtairs in the night, and greatly hurt her head. And this was the cauſe of her death. As ſhe was diſſected, by me, in the ſame place, before the ſpring-time of the year 1749, ſome things were obſerv'd that relate to the preſent ſubject

In

In the thorax, the trunks of the large veſſels were ſo much on the left ſide; although the woman was not gibbous, but only crooked with age, as I have ſaid; that I never ſaw the vena ſine pari more inflected to the left ſide, in order to open itſelf into the cava.

In the belly, the external ſurface of the kidnies was not altogether natural: and, indeed, one of them, moreover, ſhew'd ſome ſmall hydatids, which were ſomewhat protuberant therefrom. In examining the genitals, I obſerv'd that the left nympha was not to be found at preſent, nor ever had exiſted; and the right was ſmall. The hypogaſtric arteries were wider than uſual, and hard; and one of them was not without an oſſification, where it ſent out the umbilical artery. When I, at the ſame time, examin'd the neighbouring iliacs from whence they ariſe, and ſaw that the right did not at all differ from its natural ſtate, either in breadth, or in the thickneſs of its coats; I wonder'd to find the left not only leſs wide than uſual, but, particularly, furniſh'd with ſuch very thin parietes, that it ſeem'd to be a vein, almoſt from that place where it gave off the hypogaſtric artery, quite to the part where it came out of the belly.

And this circumſtance brought to mind what I had ſeen in two other women (*m*); although in them, not the arteries, but the veins, were narrower than uſual, nor ceas'd to be narrow in the thigh, of which they had been lame. But the artery of this woman, when it had come out from the belly, entirely recover'd its proper width, and thickneſs of parietes; as I clearly perceiv'd by comparing it with its fellow on the right ſide.

However, in the upper joint of the thigh, on the left ſide, I could obſerve nothing from whence to account for that ſlight lameneſs; unleſs you ſhould ſuppoſe that two ſmall and ſlight contuſions, as it were, of a browniſh colour, which were diſtinguiſh'd in the cartilage that inveſted the head of that femur, and lay near to each other, might have a relation to this effect.

19. There were two other lame women alſo, (for it has happen'd to me to find this diſeaſe more frequently in them than in men, whether by mere accident, or becauſe, by reaſon of their ſtructure of body, being leſs robuſt, women are more ſubject thereto) in diſſecting of whoſe bodies I thought that I had found a more manifeſt cauſe of that diſorder; but I afterwards doubted whether I was not deceiv'd. Be this as it will, I will here firſt relate to you both of the obſervations; for they contain other remarks that are not to be doubted, and that were promis'd you by me formerly, amongſt thoſe obſervations that relate to lameneſs; and then will likewiſe declare the cauſe of my doubt.

20. A lame woman, who was not very old, had been carried off by a dropſy, about the middle of December in the year 1746. As I demonſtrated, from this body, only the brain, the genitals, and the left limb, of which ſhe had been lame, to the ſtudents of anatomy in the hoſpital; I obſerv'd no more, in relation to the preſent ſubject, than what follows.

In taking out the brain, I obſerv'd, in the dura mater, where it inveſted the baſis of the cranium, a little before; but ſomewhat on the outer ſide;

(*m*) Supra, n. 10, & 12.

a little,

a little, I ſay, before the foramen into which the left optic nerve paſſes, that ſomething adher'd, which, if I truſted to the colour, ſeem'd to be a ſmall part of the cortical ſubſtance. Yet it was not ſoft, nor was the pia mater, which anſwer'd to that place, lacerated; but even appear'd to be ſound and ſmooth.

Then attending to it more diligently, I ſaw it to be a globule, of the bigneſs of a ſmall grape, ſomewhat hard in its ſubſtance, and ſolid; nor did it adhere to any thing, but at the lower part of it, as its ſmoothneſs ſhew'd; and by this it was very firmly fix'd to the dura mater only, and not to the bone which lay beneath it: ſo that I judg'd it to be an excreſcence of the ſame membrane, of a glandular kind, as the modification of its ſubſtance ſhew'd; and the beginning of a tumour, which, if it had increas'd, would not only have injur'd the neighbouring optic, and olfactory nerves, but the brain alſo.

From the upper and exterior part of the fundus uteri, to the right ſide, a tubercle was prominent, of the ſame figure and magnitude which was juſt now taken notice of, in that excreſcence of the dura mater; being equally ſolid, but white. To this correſponded another, internally, that was pretty ſoft and low, and manifeſtly made up of a congeries of veſicles, of the ſame kind with thoſe we generally ſee in the cervix uteri; for they were fill'd with the ſame limpid mucus as theſe: and this is the tubercle which I promis'd, in the forty-ſeventh letter (*n*), to ſpeak of here.

The ſubſtance of the uterus, which lay betwixt both theſe tubercles, was perfectly ſound. But the other parts, that belong to the genitals; if you except the teſtes, one of which was leſs than the other, but both of them contracted, of an unequal ſurface, and internally and externally white; were not only ſound; but the loweſt of all were nearly in the ſame ſtate as they are in virgins.

For that part which is call'd the furcula, was tenſe; the orifice of the vagina was narrow; and furniſh'd with a hymen; except that here, contrary to what we generally ſee, it became leſs broad, in proportion as it was more diſtant from the orifice of the urethra; as I ſhall more accurately deſcribe in another place. Yet this woman did not ſeem to have had knowledge of a man.

Finally, it was manifeſt to all who ſaw the lower limb on the left ſide, that it was ſo ſituated, as to make the toes of the foot be turn'd towards the other foot; nor was it eaſy for the hands to reſtore them into their natural ſituation: and the woman was ſaid to have walk'd by bearing on that part of the metatarſus which is neareſt to the toes. But as the foot, the leg, the knee, and the thigh, as far as could be judg'd by looking upon them externally, were free from diſorder, and ſeem'd to be each of a proper length; I laid bare the upper joint of the thigh, and thought that the cervix of that limb ſeem'd to be ſhorter than the middle-ſiz'd ſtature of this woman ſeem'd to require.

21. A little decrepid old woman, who was lame alſo, died about twenty

(*n*) N. 20.

days after her laſt ſpoken of, of an abſceſs, if I remember rightly, of the arm. Diſſecting, therefore, the ſame and other parts over again, we found the following preternatural appearances.

When I look'd upon the brain, after it was taken out from the cranium, and inverted; I obſerv'd that the trunks of both carotid arteries, and the larger branches thereof, appear'd very firm: and I found that the parietes thereof were really become much thicken'd. On the other hand, though the nerves, and particularly thoſe of the fourth and fifth pair, were very fine, firm, and thicker than uſual; yet I ſaw the optic nerves to be depreſs'd into the form of a thin bandange, narrow, and of a cineritious colour; and that medullary part, which is interpos'd betwixt them, where they join one another, to be pretty broad indeed, but not at all different from them in colour, or thinneſs.

And they themſelves; though when they had gone within the orbits, they were of a white colour, and of a moderate kind of thickneſs; when cut into, nevertheleſs, ſhew'd that whiteneſs, and a conſiderable part of that thickneſs, to be owing to their meninges being become thicker than uſual: within which meninges, as within a pretty firm kind of tube, was contain'd a bloody ſubſtance, particularly in one of the nerves.

As the eye, to which this nerve went, as well as the other, ſhew'd no diſorder when look'd upon externally; ſo neither did it ſhew any internal diſeaſe, when it was diſſected by me: ſo that I very clearly perceiv'd this diſorder, which I have deſcrib'd to you formerly (*o*), in the optic nerves, not always to have its occaſion and origin from diſeas'd, and perfectly blind eyes, (for they affirm'd that this woman, ſurpriſing as it is, was not blind, unleſs it was that ſhe ſaw a little with the other eye) nor yet from the brain, but that it firſt ariſes, ſometimes, in the nerves themſelves (*p*).

In this woman, at leaſt, though I accurately diſſected the brain; within which I could ſcarcely follow theſe nerves, by reaſon of their thinneſs; I met with no diſorder in their paſſage, or in their thalami. And although I obſerv'd the hippocampi, at their lower and extreme part, to be not at all dilated, as they generally are, yet there was not the leaſt reaſon to believe but they had been ſo from the original formation.

And beſides this, there was nothing unuſual, not to ſay morbid, in the whole brain: except that in the fourth ventricle, inſtead of thoſe medullary fibres, which occur on both ſides, for the moſt part, and go to the acouſtic nerves, there was but one on each ſide, and that ſlender; riſing, and having its ſituation lower than uſual.

In the lower jaw I obſerv'd ſome things, which, in this letter in particular, where we treat of luxations and fractures of the bones, ought not to be omitted. For the ſmall head of this bone, to the left, grew out from one ſide of its ſuperior ſurface upwards, as if from a new additamentum; as I have heretofore ſaid (*q*) was ſeen by me in the internal parts of the cranium of a certain old woman; for this bony excreſcence alſo was white and firm; and,

(*o*) Epiſt. 13. n. 7. & ſeq. & Epiſt. 52. n. 39.

(*p*) Vid. Epiſt. 63. n. 8. in fin.

(*q*) Epiſt. 27. n. 2.

beſides,

beſides, like the remaining part of that head, incruſted with a thin and very ſmooth cartilage.

If this additamentum had been rais'd up, more and more, by its increaſe, there is no doubt but it muſt have thrown the head out of its ſinus; or, at leaſt, that it muſt have very much incommoded the motions of the lower jaw. And indeed that it had, in part, begun to do ſo already, this perhaps was a teſtimony; that the moveable cartilage, which lies betwixt the head and the ſinus, appear'd, in the middle of it, to be cut with a knife, as it were, in two places; in one longitudinally, in the other in a tranſverſe direction, and obliquely.

And I ſaid perhaps, even becauſe the cartilage, anſwering thereto in the right joint, was pierc'd through with a very ſmall foramen, in the form of an ellipſe, and ſhut up by no membrane, (though I know that a larger than this was ſeen formerly (*r*)) and although this was ſituated in the middle, but neareſt to one of the extremities, and placed longitudinally, I nevertheleſs evidently demonſtrated, that, in this ſubject alſo, neither of the cartilages conſiſted of two.

But as, beſides the dentes inciſores, this old woman had no tooth left; having ſhown the whole part of that jaw, on both ſides, which had been formerly furniſh'd with the other teeth, not only to be without all traces of ſockets, but to want that portion of the bone in which the ſockets formerly had been; ſo that the foramina, through which the nerves go out (they are call'd *foramina mentalia*), were now almoſt in the upper and external margin of the jaw; and therefore that the height of this bone was greatly reduc'd, as is very clearly obſerv'd and repreſented by Ruyſch (*s*); I added, that it follow'd from hence, in regard to thoſe perſons, in whom the body of this bone has thus decreas'd after the loſs of the teeth, that in them, unleſs a greater hardneſs of the bone, on account of the advanc'd age, prevent it, the whole of the bone, on that part, muſt be much ſooner, and more eaſily, corroded, ſometimes, by a ſupervening caries; or broken by a pretty heavy ſtroke.

Upon examining the thorax, I ſhow'd four arteries to ariſe from the curvature of the aorta; for the vertebral artery of the left ſide did not ariſe from the left ſubclavian, which was much more thin than the right, but, betwixt that and the left carotid, yet nearer to the former than the latter; and as this circumſtance has occurr'd to me in another woman, of whom we have ſpoken above (*t*), and in others alſo (*u*) ſometimes, it does not ſeem to deſerve a place among the more rare appearances.

But the great artery, betwixt the heart and the right ſubclavian, was manifeſtly dilated; and when it was cut into, quite to the ſeptum tranſverſum, it ſhow'd, here and there, in ſeveral places, larger or leſſer ſpaces, ſomewhat prominent internally, and of a white colour; wherein the more compact ſubſtance of the artery would afterwards have been chang'd into a bony ſubſtance.

(*r*) Vid. Stephan. cit. in Adverſ. II. Animad. 28.

(*s*) Obſ. Anat. Chir. 82. & Fig. 65. 66.

(*t*) n. 10.

(*u*) Vid. Epiſt. 3. n. 20. & Epiſt. 15. n. 26.

At the upper part of the genitals, and within one of the teſtes, was an hydatid, of a conſiderable ſize; ſo that it extended itſelf to make up a part of the ſurface of the teſtis: and, at the lower part, the orifice of the urethra, from whence the internal coat of that tube; in the ſame manner as the internal coat of the vagina, or rectum, ſometimes is; having inverted itſelf in a ſmall degree; was prolaps'd outwardly on one ſide: and this I have already ſaid (*x*) I had ſeen in another woman, as well as that I was to ſpeak of this woman in the preſent letter.

Laſt of all, the right limb, of which ſhe had been lame, was ſhorter than the left: and being, as in the former woman, turn'd inwards, ſeem'd to have the ſame cauſe of this diſorder as in the former; I mean the ſhortneſs of the neck of the femur.

22. And thus it really ſeem'd to me at the time; and perhaps I was not entirely deceiv'd. But I was diſpleas'd with myſelf afterwards, that I had not compar'd the neck of the lame thigh with the neck of the ſound one: which would have been the only proper method of demonſtrating, whether I had, with juſtice, ſuppos'd the former to be ſhorter than natural, or not. For perhaps that might ſeem ſhorter than uſual, which was of a proper length, and well-proportion'd to a body of no large ſtature: and there are ſo many cauſes of lameneſs, not only above the acetabulum, but in the acetabulum, and below the acetabulum, that, although I ſaw many of them to be abſent, yet perhaps I could not ſufficiently diſcern whether all of them were abſent or not. And I chooſe here to take notice of the greateſt part of them, in that order which was juſt now referr'd to.

Above the acetabulum is any deprav'd ſituation whatever of the os innominatum; a ſituation of which kind was added to the other diſorders, in thoſe two lame women whom I deſcrib'd above, before the others (*y*), particularly in the firſt. And the celebrated Baſſius (*z*) produces many examples of a diaſtaſis, or ſeparation, of the os ſacrum, from this bone, in children that are lame; adding the reaſons why this eaſily happens to infants, the ſigns whereby it may be diſtinguiſh'd, and the cauſes for which it is difficult to be cur'd, and therefore may remain through the whole of life; as in a Venetian young man who was brought to me for the ſake of taking my advice, I ſaw that it had remain'd from childhood, and judg'd that it would always remain.

And if you conſider duly theſe things; whenever you ſee that one limb is manifeſtly longer or ſhorter than the other, and the cauſe of this inequality is not manifeſt in the limb itſelf; you will firſt of all examine whether the ſituation of the oſſa innominata is unequal; for this ſituation is follow'd by that of the acetabulum, as it is hollow'd out in theſe bones, and that of the acetabulum by the limb; leſt by ſuppoſing thoſe bones to be alike in their ſituation, which are not ſo either naturally, or by the force of diſeaſe, you are ſoon after deceiv'd, in judging whether the limb itſelf be really longer or ſhorter than it ought to be.

(*x*) Epiſt. 50. n. 51. Vid. & Epiſt. 70. n. 10.

(*y*) n. 10. & 12.

(*z*) Dec. 4. Obſ. Anat. Chir. 2.

23. And

23. And in the acetabulum itſelf, you very well conceive, from what has been more than once ſaid above, that the capacity and figure of the ligamentum teres, and the head of the femur, may be diſeas'd in many ways. And to theſe things we muſt add tumours, whether they are form'd in the ligament, as our Falloppius (*a*) hints; or in any other part within the acetabulum, as our Veſlingius likewiſe (*b*) in general ſays; where he ſays, that he had frequently viſited, with Sala, a Venetian nobleman, "in whom a tu-"mour having ariſen within the acetabulum of the coxendix, the head of the "femur was evidently puſh'd outwards."

And Valſalva, in an opinion which he wrote for a noble youth, in whom the left limb was become longer than the right, ſuſpected that the mucilaginous gland of the acetabulum had gradually become tumid; not only becauſe in a boy, in other reſpects ſound and healthy, he did not think it probable that the ligaments were relax'd, but becauſe it is ſo natural to the glands to ſwell: and laſt of all, becauſe, after laying in bed a long time, in conſequence of an acute diſeaſe, that limb was found to be very much longer than before, which he accounted for from the increaſe of the gland, by reaſon of being ſo long uncompreſs'd by the head of the femur; he therefore advis'd, among other things, that the ſhoe under the right foot, on which the child us'd, for the moſt part, to bear firmly, when ſtanding, ſhould be ſo much higher than the other, as to make both the limbs equal, and enable him to bear on the left alſo, and compreſs the gland.

But in a ſoldier, whoſe caſe was publiſh'd at Hall, and which has been quoted above by me (*c*), a kind of ſpongy ſubſtance was really found; which by filling more than half of the acetabluum, had forc'd the head of the femur from thence.

24. Finally, under the acetabulum itſelf there are many more cauſes of lameneſs. For, to omit mentioning the fracture of the cervix femoris, whereof we have ſpoken, and the diſeaſes of the capſular ligament, as it is call'd, the muſcles, in the firſt place, which preſerve the thigh in its ſituation, if they are paralytic, do not prevent the very weight of the whole lower limb from extending the ligaments, and drawing the head of the femur downwards: or if they are contracted by pain, tumour, or convulſion, they keep the head of this bone buried ſo much the deeper, and preſs'd up ſo much the cloſer, in the acetabulum, as to make the limb ſeem a little ſhorter than it really is.

And with how great a force the ſame muſcles ſometimes act, even by the natural government of the will, is demonſtrated, in particular, from the caſe deſcrib'd by Ingraſſias (*d*), of the leſſer trochanter of the thigh being pull'd away from the other parts of the bone, by ſome only of thoſe muſcles which a young man, of noble birth, had immoderately ſtrain'd in the exerciſe of tilting: and this caſe becomes leſs incredible by the figures of Ruyſch (*e*) more than by others; in which he repreſents the ſame trochanter, that had ſeparated from the os femoris of a young man by boiling.

(*a*) Præfat. in Tract. de luxat. & fract. Oſſium.
(*b*) Epiſt. 25.
(*c*) n. 15.
(*d*) in Gal. l. de Oſſib. c. 20. Comm. 4.
(*e*) Theſ. Anat. 5. Tab. 2. fig. 2. & 3.

Indeed

Indeed any fracture of the femur itſelf is ſo rarely cur'd, without a lameneſs being the conſequence thereof, that Celſus has expreſsly ſaid (*f*), "we "muſt not be ignorant that, if the femur be broken, it becomes ſhorter; "becauſe it never returns afterwards into its former ſtate: and that we "tread, for the future, on the upper parts of the toes of that leg."

And it becomes ſhorter, becauſe betwixt the extremities of the fracture ſome part is loſt, which has been ſhiver'd into fragments; or becauſe thoſe extremities are adapted to each other with ſo much difficulty, in ſuch a manner as to preſerve the natural figure and poſition of the bone; as in that femur in particular, the figure of which is publiſh'd by Grutzmacker (*g*): or becauſe even when well adapted to each other, the extremities are afterwards mov'd aſunder by the action of the muſcles, which very eaſily happens in an oblique and oblong fracture; whereas in a tranſverſe fracture, one extremity puſhes againſt the other, ſo that by this means they are mutually preſerv'd in their reſtor'd poſition.

To theſe other cauſes of that kind, Valſalva added this; that in thoſe oblong and oblique fractures, which are brought on by great violence and impetus, ſome fibres of the neighbouring muſcles may ſometimes be intercepted betwixt two parts of the fractur'd bone, ſo as to hinder an exact coaptation and coalition; or even retard the coalition for a very long time. But although none of theſe things which have been mention'd may happen, or though none of them may happen in that manner which we ſpeak of here, ſo as to make the os femoris ſhorter than it naturally is; yet lameneſs cannot be avoided, if the muſcles, the tendons, or the nerves, being very much weaken'd by the fracturing cauſe, or by the conſequent inconveniences, either cannot move the thigh, or the parts which lie beneath it, with a proper ſtrength, or in a proper manner.

25. It is alſo manifeſt, that even the parts which lie beneath the femur, are not only liable to moſt of thoſe diſeaſes that are mention'd, but bring on lameneſs in the perſon ſo affected. It will therefore be ſufficient for me to ſay much leſs of each of them; beginning with the joint of the knee; which, however, is a part that belongs in ſome meaſure to the thigh.

26. A woman, of whom mention is made in the fifty-ſecond letter (*b*), though her hiſtory was deferr'd to this letter, becauſe ſhe could not bend one of her knees; having receiv'd a violent blow on her forehead, which the worſt kind of ſymptoms were immediately the conſequences of, had theſe ſymptoms diſappear; and lay ill in the hoſpital, of ſo ſlight a fever, that on the ſeventh day ſhe aſk'd for a leſs ſlender diet. But on the fourteenth day, behold a more violent fever attack'd her, with a coldneſs and perturbation of mind: and death follow'd on the ſeventeenth day, there being never any ſymptom, either in theſe latter days or in the former, of the thorax being affected; and no complaint of this kind being made.

It was now the month of December in the year 1745: at which time, as it was my annual cuſtom to demonſtrate a great number of things to the pupils in the hoſpital; and as theſe requir'd the diſſection of the thorax,

(*f*) De Medic. l. 8. c. 10. Sect. 5. (*b*) n. 9.
(*g*) Differt. de Oſſ. Medulla.

the

the belly, and the limbs, they did not allow us time to diſect the head; it was not therefore open'd. But in the diſſection of thoſe other parts theſe preternatural appearances were obſerv'd.

One of the thoracic cavities had almoſt four pints of water, of a middle colour betwixt green and yellow; but the other much leſs: the lungs in both of them being perfectly uninjur'd. In the pericardium was the uſual kind of moiſture; nor more than that: but the heart was lax: and in the right auricle thereof was a polypous concretion of a white colour, thick, and compact. In the belly ſcarcely any thing was obſerv'd, beſides an inclination of the uterus to one ſide.

Finally, after having compar'd the limb; the leg of which could not be bent even by my hands, being prevented, in appearance, by the knee; with the ſound limb, and not being able to find any external difference by the eye, except that the rotula was ſomewhat more prominent than uſual; I determin'd firſt to try whether the extenſor muſcles of the leg, whatever was the cauſe of the diſeaſe, could act in ſuch a manner, as to prevent, by this contrary action, the knee from being bent.

Cutting theſe muſcles therefore tranſverſely, at a little diſtance above the knee, the leg could immediately be bent. And yet the knee, as the prominence of the rotula, which ſtill continued, demonſtrated, was not wholly free from diſeaſe. For the rotula was prominent, becauſe the external condyle of the femur was not only longer from the poſterior to the anterior part; which was manifeſtly prov'd by comparing it with the external condyle of the other femur; but was even prominent forwards, more than it is wont to be at other times. Yet on the other hand, it was equally prov'd, by compariſon, that the lateral external ligament of the knee was much thicker in the other knee than in this.

27. As it has been ſufficiently pointed out in the letter which I juſt now referr'd to, from whence that water in part, and its filthy colour, could be brought into the thorax; and as the other circumſtances in the obſervation in queſtion, are ſufficiently clear of themſelves; I will mention ſome things of the contrary affection of the knees, and of ſome of their diſeaſes.

The knee of which we ſpoke juſt now could not be bent. And the illuſtrious Haller (*i*), having lit upon another which could not be extended, found no other cauſe of this impediment, "but a hard and almoſt tendinous celuloſity," on that part, I ſuppoſe, or at leaſt moſt on that part, which was poſterior in the limb.

That the rotula ſhould be very frequently broken tranſverſly, as moſt generally happens, is not at all to be wonder'd at, when in conſequence of violent blows; but this is ſurprizing, that either from a violent and ſudden contraction of the muſcles which extend the leg, or from the reſiſtance of them, this very bone is ſometimes broken; or the ſtrong tendons of the muſcles are broken aſunder above it. An example of which kind of rupture you will read in the celebrated Baſſius (*k*), and before him two in Ruyſch (*l*); in

(*i*) Opuſc. Pathol. Obſ. 50.
(*k*) Dec. 3. Obſ. Anat. Chir. 6.
(*l*) Adv. Anat. 2. c. 2.

whom,

whom (*m*), and in Palfin (*n*); not to mention other authors beſides thoſe that are in my hands while I am writing; you will find obſervations of this kind of fracture.

The celebrated Baſſius (*o*) has alſo obſerv'd, that the ſemilunar cartilages, which lie in the joint of the knee, betwixt the femur and the tibia, may ſometimes grow out, from an afflux of humours, and bring on a lameneſs.

And, finally, in regard to thoſe who are bandy-legg'd, to omit what Severinus has written at large (*p*); Ruyſch (*q*) found, in an adult who was bandy-legg'd, the cavities of the upper part of the tibiæ, which lie beneath theſe cartilages, not equally depreſs'd to receive the condyles of the femur; and, conſequently, both thoſe bones ſituated in a different manner from their natural diſpoſition: which circumſtances will better appear from the figure (*r*) than from the deſcription.

For I have taken notice of theſe things, that you may be more fully inform'd, from the books of thoſe that I have quoted; and may learn from thence the ſigns by which you may diſtinguiſh them, and how and when you may undertake the cure; and, on the contrary, when the time is paſt in which it was in your power to be of ſervice.

Nevertheleſs, in ſome of thoſe inſtances which have been mention'd, and particularly in the fracture of the patella, and the rupture of the tendons that extend the leg, a length of time is of more uſe ſometimes, than we could hope or expect: and this it happen'd to me to ſee, in two perſons, ſome years ago.

The firſt was a tall and fat man, who leaping down, ſome years ago, from a chariot, and fracturing his right patella tranſverſely, had applied to the art of ſurgery in vain; till having ſent for that moſt excellent profeſſor of ſurgery in this college, Jerom Vandelli, on the twenty-ſecond day after the accident, he brought the upper part of the rotula to the lower as much as he could; ſo that the one might be diſtant from the other by a much leſs interval than before; and confin'd them in that part by the help of bandages.

This interval was about a finger's breadth: and therein nature herſelf gradually generated ſomething, whereby the parts of the rotula might be firmly connected to each other. The man, therefore, made uſe of that limb freely; when happening to fall down upon the ſteps of a certain bridge at Venice, and bending that leg violently and ſtrongly, he heard a noiſe as if of ſomething being ruptur'd in the knee: and the fact was, that by this violence of flexion, whatever it was that had kept the parts of the rotula connected together was ruptur'd.

The ſurgeons, finding it in vain to attempt to bring the broken parts ſo nearly into conjunction, as they had been a little before, at length, endeavour'd to make the joint as firm as poſſible by applying an inſtrument to the knee, and ſtrengthening it by means of the clay from the baths near Verona. And after a long ſpace of time, the man, who had ſuffer'd great

(*m*) Obſ. Aat. Chir. 3.
(*n*) Anat. du corps hum. tr. 5. ch. 17.
(*o*) Dec. 2. Obſ. 5.
(*p*) De recond. Abſceſſ. nat. l. 6. P. 2.
(*q*) Adverſ. 2. cit. c. 6.
(*r*) Ibid. Tab. 1. Fig. 2.

pains

pains from both falls, and could not at all uſe his limb, had gain'd ſo much advantage, that he makes uſe of it now, without any inſtrument, and without any trouble or uneaſineſs: and this, whether he ſtands, bends his knee, or walks; which he does with great expedition, being but ſlightly lame on that ſide.

In examining this knee with accuracy, I found the parts of the rotula, which were almoſt equal in ſize, disjoin'd from each other by a very conſiderable interval; and that much greater ſtill when the knee was bent: for where the rotula ought to have been, there then appear'd a cavity, which was extended about two thumbs' breadths in length, and not leſs in width; being about a finger's breadth deep: ſo that we could perceive, by the touch, the condyles at the lower part of the femur, and the upper border of the tibia.

This gentleman was brought to me by the profeſſor before-mention'd, that I might ſee the circumſtances I have related: and he ſaid that I might likewiſe, if I pleas'd, ſee the ſame things nearly, in a certain ſervant-man at Padua.

But the ſecond of the patients of whom I ſpoke above, was a noble Venetian, whom I ſaw in conjunction with the profeſſor before-mention'd; being deſir'd to conſult what method might to be made uſe of, to ſtrengthen his knee. This gentleman, after two falls, by the firſt of which his rotula was ſaid to have been broken tranſverſely, and afterwards to have coaleſc'd by the help of art; though it was certainly wholly drawn upwards by the ſecond; now walk'd expeditiouſly, and in an upright poſture, through even places, like other men, and without any ſupport; but had not yet gain'd much ground in going up ſtairs; for though he could go up, he could not go up with equal expedition.

In this patient alſo, when he ſtood, in the very ſeat of the rotula, which had been drawn up from thence, as I have ſaid, a cavity occurr'd to the eye. And I did not doubt but the prominent ſides of this cavity were, as in the former man alſo, the very large lateral parts of that aponeuroſis, whereby the muſcles, extending the leg, are inſerted thereinto: and to theſe parts it ſeem'd, that whatever motions either of the patients perform'd without the rotula, were to be aſcrib'd.

That is to ſay, it had happen'd to both of them, that the intermediate part of the aponeuroſis was broken aſunder, without any injury being done to the lateral parts: to the former of them, in that part where it envelopes the rotula, to which it very firmly adheres; but to the latter, as far as I ſaw, betwixt the rotula, and the tuberoſity that is prominent in the tibia.

Nor do I think that this inferior part, which I know that others alſo have ſeen ruptur'd more than once, is made leſs liable to be eaſily broken, by the ligament which moſt authors ſuppoſe to be under it, going from the rotula to that tuberoſity. I, at leaſt, notwithſtanding I have look'd for it very diligently, and frequently, in bodies, could never be ſo keen-ſighted, as very clearly to diſtinguiſh any thing that differs from a tendinous nature, in the fibres of that aponeuroſis; or any thing that could properly and ſtrictly be call'd a ligament.

Wherefore, I am ſtill of the ſame opinion with Veſalius (*s*), who expreſsly ſays, " that the patella is join'd neither to the femur, nor to the tibia, other-" wiſe than by the interpoſition of tendons: and that the patella has this in " peculiar to itſelf, that it is not connected to any other bone by the help " of ligaments."

And I could wiſh that, as Weitbrecht (*t*) has profeſs'd to follow this very great anatomiſt in this place, he had alſo follow'd him more conſtantly. However, this is not the place to examine ſome paſſages in his otherwiſe excellent book, entitled, *Syndeſmologia*, which relate, for the moſt part, to the too great facility in ſuppoſing ligaments; at other times, to diſſentions that are not at all neceſſary; and, ſometimes, to a ſilence that is rather unjuſt. Now let us go on with our purpoſe.

28. How far the bones of the leg, alſo, may be prejudicial to walking, and how far they may be the occaſion of lameneſs, no one is ignorant; I mean, where the fracture of either of theſe bones is improperly cur'd, and particularly the fracture of that which is the chief of the two; I mean, of the tibia: from the diſeaſes of which I ſaid, juſt now, that men became bandy-legg'd likewiſe.

And although, by reaſon of the natural ſtraitneſs of theſe bones, it is more eaſy to cure a fracture of them, in ſuch a manner that the limb may not be unlike the other either in figure or in length, than that of a curv'd or inclin'd bone, ſuch as the thigh-bone is; yet if the fracture is oblique, it very eaſily happens, that the limb becomes ſhorter, and ſometimes diſtorted.

And for this reaſon, ſome of my countrymen, in my memory, have choſen rather to ſuffer what many formerly ſuffer'd (*u*); I mean, that their bones ſhould be broken again, and put in a better direction; and I know that this has ſucceeded well with ſome: but, on the other hand, I know a phyſician here, not without erudition, who having permitted the bones of his leg, which were beginning to coaleſce, to be broken again by the hands of the ſurgeon; brought on himſelf the moſt violent ſymptoms, and death.

You will, perhaps, aſk me at what time fractur'd bones begin to coaleſce, and at what time they come to a perfect conſolidation with each other? But this, in my opinion, is a thing of ſuch a nature, that, if we conſider the mode of coalition, the time cannot certainly be defin'd. For conſolidation; to ſet aſide the conſideration of gravid women, in whom we read not more than one example of a fracture being conſolidated in that part, where we read many of its not being conſolidated (*x*); for conſolidation, I ſay, will not begin, or be perfected, ſo ſoon in diſeas'd as in ſound bodies; nor in ſound and healthy bodies, in like manner, with equal celerity, in old men as in young men; or in all thoſe who have not the ſame fracture, or are not treated with the ſame method of cure.

(*s*) De corp. hum. fabr. l. 1. c. 32.
(*t*) Syndeſmolog. S. 5. § 13. cum notula *m*.
(*u*) Vid. Celſum de Medic. l. 8. c. 10. prope fin.
(*x*) Eph. N. C. Dec. 1. A. 1. Obſ. 25. cum Scholio.

Nor,

Nor, indeed, does experience teach us otherwiſe, if we attend to the experiments which the celebrated Du Hamel (*y*) has made on brute animals. For in a diſeas'd animal, he found the callus, on the fifteenth day from the fracture, not perfect, as in others, at an equal diſtance of time from the fracture; but equally imperfect as in another on the tenth day. Theſe animals were both young pigeons: the bone was the ſame: and had been broken, replac'd, and tied up in exactly the ſame manner: for in thoſe where it was very ſtreightly tied up, either a gangrene, which Celſus (*z*) foretels from too tight a bandage, brought on death before the cartilaginous firmneſs of the callus could appear, as this was not obſerv'd in the others before the fourth day; or even on the eighth day (*a*), on which the callus began to be bony in others, there was not the leaſt beginning of any callus: but every thing was in the ſame ſtate as if the bone had been juſt then broken.

29. And all theſe experiments, as well as many others, that very experienc'd man explains, by accounting for the callus; not, as others do, from the bony fibres producing themſelves, or from the bony juice which diſtils from theſe fibres, or from the blood which is effus'd and adheres to the fractur'd bones; but, according to his own obſervations, from the external or internal perioſteum, becoming tumid and thicken'd at the place of the fracture; and changing its laminæ, firſt, into a cartilaginous, and, after that, into a bony firmneſs.

But in regard to this firmneſs of the callus; whether you ſhould chuſe to explain it according to the obſervations of Du Hamel, that I have commended; or whether you ſhould chuſe to explain it according to the obſervations of that ingenious man Dehtleefius (*b*), which well deſerve notice; you will not doubt but we muſt think in the ſame manner of this, as we have ſaid of the beginning and completion of the callus: I mean, that, according to the various conditions, which are mention'd, and others of that kind; to which the longer or ſhorter time, alſo, from that of its being completed muſt be added; the callus may be more or leſs compact, or, at leaſt, more or leſs hard and firm.

And by theſe means, I think, that the oppoſite opinions of many very celebrated men are to be reconcil'd to each other. For there are ſome who aſſert that the callus is of the ſame firmneſs as any part whatever of the bone; and that even, if it be of a diameter, as it often is, larger than the bone, it is ſo much the ſtronger in proportion to its diameter being increas'd; and that this is prudently provided by nature, becauſe the fractur'd bones, being very rarely replac'd according to their former direction, would otherwiſe be more ſubject to a new fracture in that part; and might coaleſce with difficulty in the ſame place again, becauſe the callus is deſtitute of a vaſcular ſtructure.

To lay aſide which opinion, (not only becauſe, according to the obſervations of Du Hamel, the callus does not ſeem to be deducible from bone,

(*y*) Memoir. de l'Acad. R. des Sc. A. 1741. Mem. 1.
(*z*) C. 10. cit. S. 1.
(*a*) Mem. 2.
(*b*) Diſſert. exhib. oſſium calli generationem, &c.

nor from callus, but from the perioſteum, as we have ſaid; but alſo becauſe a ſurgeon of ſome eminence affirms, that, when the former callus is broken, a ſecond is form'd ſooner than the former) and to attend to this one thing, that the callus is ſaid to be not leſs reſiſting and firm, at leaſt, than the bone itſelf; there are certainly many other grave men, who advance things which do not at all agree therewith.

For ſee how Celſus (*c*); in order to leſſen the too great quantity of callus, which is form'd upon bones that are rightly glutinated to each other; applies ſuch things to the limb, as, if the callus were of a bony hardneſs, could be of no effect; as, for inſtance, long and gentle frictions of oil, ſalt, and nitre: various fomentations of warm ſalt-water, digeſtive malagmas, and tighter bandages.

Or if you do not think that theſe things were uſeful; you will read Du Hamel (*d*) aſſerting, that a dripping of water was not only frequently uſeful for that purpoſe; but alſo that, where there had been too free a uſe of it, it had ſoften'd the callus to ſuch a degree ſometimes, that the two extremities of the bone, which had coaleſc'd with one another, were ſpontaneouſly disjoin'd again.

But whether theſe calli were either not of a very large diameter, or were very recently form'd, as that of two months growth, and but little prominent, in the leg of a young lamb, which was uncemented by being put into a pretty acrid lixivium, during the ebullition, as mention'd by the ſame Du Hamel (*e*); at leaſt, thoſe two, which the Sepulchretum (*f*) deſcribes from Rolfinc, in the thigh-bones of a certain dead body, were of a very conſiderable and monſtrous bulk and diameter, and not at all recent, as appears from the relation: yet in this body, "when boil'd after diſſection, in "order to reduce it to the ſtructure of a ſkeleton, both of theſe calli were "mutually aud totally ſeparated."

And that obſervation which was communicated to Salzmann (*g*), by an eminent ſurgeon, deſerves particular mention in this place. A ſoldier had been cur'd of a fracture of the tibia, by means of ſo firm a callus, that he could walk and bear upon the limb which had been fractur'd, as well as upon the other, and without the leaſt inconveniency of any kind; when happening to be ſeiz'd, eight months after, with an acute fever, and being brought into the ſame hoſpital wherein he had lain before with the fracture, it was obſerv'd, that while the fever was counteracted by the uſual courſe of remedies, the extremities of the bone were again ſpontaneouſly disjoin'd; the callus being gradually conſum'd, as it were, by the febrile heat: and although theſe extremities could not be re-agglutinated, during the continuance of the fever; yet, ſoon after, when the fever was remov'd, the tibia was reſtor'd to its former ſtate of ſoundneſs by nature itſelf, without any great apparatus either of remedies, or of bandages.

Finally, the compages of the callus itſelf, when examin'd in dead bodies, is ſometimes of ſuch a nature, that, notwithſtanding its diameter is found to

(*c*) In fine c. 10. paulo ante cit.
(*d*) Mem. 2. cit.
(*e*) Ibid.
(*f*) Sect. hac 5. Obſ. 1. § 8.
(*g*) Differt. de Artic. Analog. &c. c. 2. § 7.

be much larger than that of the bone to which it has grown, it is far more fragile, nevertheleſs. Nor is it a ſubſtance of hard bone, but a ſpongy ſubſtance, ſuch as is ſeen betwixt the two laminæ of the cranium.

A callus of this kind being deſcrib'd, and repreſented in a plate, by Ruyſch (*b*), in the wing of a hen, and a duck; this author ſays, "That he "had alſo obſerv'd the ſame thing in men ſometimes: ſo that we muſt not "give too much credit to thoſe who ſuppoſe the callus of fractures to be "always ſo exceedingly firm, that bones formerly broken, and glued toge-"ther again, are, if they undergo a ſecond fracture, ſooner broken in any "neighbouring part, than in the callus ſpoken of:" and he does not doubt but from thence it is, that ſome perſons receive a freſh fracture from the ſlighteſt occaſion, after the conglutination "of fractur'd bones:" and even merely by walking.

But if you wiſh for many examples of the ſtructure obſerv'd in *calli*, and of the wonderful length that they ſometimes have; you will, I believe, ſcarcely find them in a larger number, in any other authors, than in the learned Jo. Beniam. Boehmerus (*i*). Yet this number you may increaſe, I think, as far as relates to the ſtructure, by the obſervation of that celebrated man Alexander Camerarius (*k*), on the thigh-bone of a child; and, in reſpect to the length, by the example given by Jo. Jacob. Bajerus (*l*), on the lower jaw of a miller; the callus being "about the ſize of three inches, "from the chin to the middle."

30. Now to return from the circumſtances that happen to broken bones, not of the leg only, but to other bones alſo, and to come to the peculiar fractures of thoſe bones; I will ſubjoin an obſervation, which contains a kind of rare circumſtance beſides.

31. A ruſtic old man, of a pretty fat habit, had fallen from a tree upon his feet, while he was pruning a vine; and had broken his right leg in ſuch a manner, that the bones were prominent on the internal ſide, a little above the foot: and this through a wound which they themſelves had made. Theſe bones being replac'd in the beſt manner they could be, the man was carried into the city, and into the hoſpital, in the cold ſeaſon of the year; for it was about the middle of February, in the year 1736. As he, therefore, was expos'd to the injuries and inclemencies of the weather alſo, he could not be ſav'd; but was carried off within four days after the fracture.

Although the anatomical demonſtrations, which I was then giving in the theatre, began to draw to a concluſion; I was not, however, willing to neglect the opportunity that was offer'd me, of examining the viſcera of a body of this kind; and of inſpecting the diſeas'd limb. In which parts I obſerv'd the following preternatural appearances.

The abdomen; which was ſomewhat tumid the day after death, for no other reaſon, however, but becauſe the air included in the inteſtines, made theſe ſomewhat tumid alſo; when it was cut into and laid open, ſhew'd the omentum to be ſo drawn upwards, as not to deſcend below the tranſverſe

(*b*) Theſ. Anat. 8. n. 49. & Tab. 3. Fig. 5. & Catalog. Rarior. Theca B. Reſpoſ. 2. n. 2.
(*i*) Diſſert. de Oſſium Callo.
(*k*) Act. N. C. Tom. 1. Obſ. 53. verſ. fin.
(*l*) Eph. N. C. Cent. 7. Obſ. 4.

part

part of the colon, which it cover'd. The ſpleen was larger than uſual, and eaſily to be lacerated.

The liver was pale, and in whatſoever part it was turn'd to the diaphragm, ſo cloſely connected therewith, that the membranes which inveſted both of theſe parts, did not ſeem to be two, but one only. The gall-bladder was oblong, and fat, although of a bright yellow colour externally; yet it contain'd bile that was of a yellow colour inclining to green, and fluid, but not fæculent: and contain'd, though in a man who had not been icteric, nineteen calculi.

All theſe were in the fundus, nor were any elſewhere, unleſs a very ſmall one lay hid in a certain gland, betwixt the coats of the cyſt, as a black point, which was ſeen through the coats, in one or two places of the internal ſurface, ſeem'd to prove. But thoſe of which I had begun to ſpeak, were all ſomewhat round in their figure, ſmall in their ſize, black in their colour, and granulated on their ſurface, reſembling nothing more than ripe mulberries.

Theſe calculi being then thrown into water by me, they all of them immediately went to the bottom, and continued quiet there. But being preſently taken out of the water, and laid on it after ſome days; not thrown upon it; they ſubſided ſomewhat more ſlowly, and emitted bubbles: and being laid upon the water, in the ſame manner, two months after likewiſe, they remain'd very long on the ſurface.

At which time, applying one that was dry to the flame of a candle, it did not catch the flame, but only ſent forth ſome ſparks, and the diſagreeable odour of a burnt feather, and was withdrawn from the flame nearly in the ſame ſtate it had been in before. However, ſome fragments of the others were become not at all ſofter by a two months maceration in water; and retain'd the ſame firmneſs always.

You may add theſe remarks to thoſe which I formerly wrote to Schroeckius (*m*), upon cyſtic calculi.

But now take that circumſtance which I ſaid was very rare; at leaſt I never ſaw it but in this body. The trunk of the inferior vena cava, where it became one by the junction of the iliac veins, did not occupy the right ſide of the lumbar vertebræ; as it always us'd to do; but occupied the left ſide, and went on to the left of the great artery, till, bending itſelf obliquely to the right ſide, over the anterior ſurface of this artery, immediately under the ſuperior meſenteric, it return'd to its uſual ſituation on the right ſide.

From this inflexion it happen'd, that, although the left emulgent vein open'd into the cava, two or three inches lower than the right emulgent, if you extended the cava into a ſtrait line; yet the left kidney had not a much lower ſituation than the right. As I ſhould have been ſurpriz'd at this paſſage of the vena cava, over the ſurface of the aorta, in any body whatever; I could not ſufficiently admire the circumſtance, in the body of a man who had grown old in the continual and hard labours of a country-life. However, the aorta had ſome little hardneſs at its diviſion into the iliacs; and in like manner at the mouth of the ſuperior meſenteric.

(*m*) Act. N. C. Tom. 2. Obſ. 167.

Upon

Upon opening the thorax, the lungs ſeem'd to be in a ſound ſtate, notwithſtanding they every where adher'd to the pleura very cloſely; whether this membrane inveſted the cheſt, the ſides, the back, or the diaphragm; nor was any diſorder obſerv'd in the neighbouring heart.

Laſt of all, I examin'd the broken leg. It did not ſwell a great deal. The tibia, and fibula, were both broken, a little above that place where they are join'd to the foot; the fracture being continued longitudinally, but not in a direct line. Yet there was not a great quantity of blood extravaſated thereabout: nor were the odour, and the colour, bad in their appearance.

32. I examin'd this fracture, not becauſe in an adult man, and an old man too, I expected to ſee any thing, ſo ſoon, that related clearly to the incipient callus; but rather with a view to other things; and to this among the reſt, whether, if any fragment had been disjoin'd from the bones, this was involv'd in a kind of mucous humour, as I had read in Valſalva's papers that he had found it to be involv'd.

There is alſo this remark in a certain letter of his, that relates to the preſent queſtion: where a fracture happens to be complicated with a wound, the blood ſhould be ſuffered to flow out; for by theſe means the bones and the fleſh would be more eaſily join'd together: and it was for this reaſon, he ſays, that in the caſe of a broken thigh and tibia propos'd to him, the former had been conſolidated ſooner than the latter, becauſe the fracture of the femur was join'd with a wound, by which the blood had been diſcharg'd; and the fracture of the latter was not.

And now that I have begun to remark theſe things, I will not omit that which was related to me by a ſurgeon of ſome eminence, in regard to himſelf. His leg being broken, and the bones being again replac'd, and properly diſpos'd, he firſt obſerv'd, that, at the end of an hour after the ſurgeons had bound up the leg, his pain was encreas'd: and as they denied, upon examination, that this could be owing to the bandage becoming more tight in the mean time, he perceiv'd that it was owing to a ſtupe which they had laid around it, moiſten'd with the white of an egg after being beaten up; and which, while it was growing dry, preſs'd ſome of the bony fragments to the ſenſible parts that lay around them.

And in the ſecond place, he had obſerv'd, that while thoſe who were about him walk'd too and fro in the room, the pain was encreas'd by the tremor of the room and the bed; and that his fear was always encreas'd, leſt this tremor ſhould be injurious to the conglutination of the bones.

And finally, when his fracture was perfectly cur'd, that he had an uneaſineſs and difficulty remaining in his heel for a very long time, when he attempted to walk; though he was a young man, and in other reſpects in good health: and that becauſe ſufficient care had not been taken, through the whole courſe of the long time, wherein he had kept his leg immoveable, to prevent his preſſing upon the heel: and from hence you will learn why ingenious and attentive ſurgeons would have the heel of the fractur'd limb be laid quiet and eaſy in a foramen, form'd by the convolution of a ſtupe, or ſoft rag, into the form of a ring; ſo that the patient ſhould not ſupport the leg immediately upon the heel.

33. "That

33. "That both bones of the leg are ſometimes luxated near the foot," has been aſſerted long ago by Hippocrates (*n*): and that luxation would certainly make the limb ſhorter, if at any time they were ſo disjoin'd, that the aſtragalus aſcended betwixt the two: yet that this cannot come to paſs, unleſs, beſides the moſt violent ſymptoms, the foot appears to be very evidently carried to the external ſide of the leg, is ſufficiently demonſtrated in a certain reſponſe of mine: and if you read this in the work of the celebrated phyſician who has publiſh'd it, you will, I imagine, perceive the caſe to be ſo clear, as not to think neceſſary that I ſhould add any thing on this ſubject here.

34. Hitherto I have written ſo many things upon the lower limb, that unleſs we ſhould chooſe to be very long, we muſt add only a few things of the upper limb, and of the vertebræ. A part of which, however, will belong to the lower limb likewiſe, as you perceive that part of what has been ſaid may be transferr'd to other bones likewiſe. For in the number of theſe things alſo is that which I have taken notice of from Columbus (*o*), I mean that the epiphyſes are eaſily ſeparated from the bones in children. And he who does not attend to this, may be ſometimes deceiv'd in them, by taking theſe ſeparations for fractures.

I remember this to have happen'd to a ſurgeon, in other reſpects experienc'd; who, ſeeing both the arms of a noble boy tumid at the wriſts, and perceiving, by examining with the hand, that, beneath a kind of fluctuating humour, the extreme parts of the radius and ulna were there become moveable; accus'd the woman that us'd to carry him, of ſuffering the child to have fallen out of her hands, and to have broken both its arms.

But as ſhe conſtantly denied it, the parents, not knowing which of them they ſhould believe, begg'd of me to hear the relation of the ſurgeon; and judge whether he might be deceiv'd or not. As they, during their converſation with me, had ſaid that the child had labour'd, ſome little time before, under a very violent kind of ſmall-pox, and this was confirm'd by the ſurgeon; ſee, ſaid I to him, I beſeech you, leſt abſceſſes, which follow'd the ſmall-pox, ſhould have ſeparated the epiphyſes of theſe bones, by eroding the perioſteum, whereby they were connected therewith: for Parey formerly ſaw this circumſtance happen, not only from other internal cauſes, but in particular, "frequently from the ſmall-pox;" and as that paſſage of Parey, which relates to this queſtion, is transferr'd into the Sepulchretum alſo (*p*), I wonder how it ſhould eſcape men, in other reſpects very learned, who have quoted ſurgeons of later date than Parey upon this ſubject.

You aſk me the event of the caſe. It was juſt as I ſuſpected; the ſurgeon himſelf ingenuouſly confeſſing ſoon after, that my admonitions were true; and thereby meriting the praiſe of an ingenuouſneſs, which many others would not condeſcend to obtain, not only when I have ſuſpected, but even demonſtrated, their errors. However when the diſeaſe was known, the child was perfectly cur'd ſoon after.

(*n*) l. de Fractur. n. 14. apud. Marinell.
(*o*) ſupra, n. 2.
(*p*) Sect. hac 5. Obſ. 1. § 7. cum Schol.

Moreover,

Moreover, in regard to "the ſeparation of the epiphyſes, in conſequence "of the ſmall pox," as I know that ſome obſervations are extant even in a Programma (*q*), which has not yet come to my hands, I mean one of the celebrated Weiſſius; ſo I do not doubt but if any one were to write at this time, "of the relics of the ſmall-pox," he would not; as Georgius Francus (*r*), a man in other reſpects very learned, did formerly, on the ſame ſubject; omit the conſideration of the ſeparation of the epiphyſes, which does not happen very rarely.

Yet nobody ſaw a greater number of epiphyſes ſeparated from the bones, in one ſeaſon, from an internal cauſe, though of another nature, than Poupart (*s*), in that multitude of ſcorbutic patients, which crouded into the hoſpital at Paris, in the year 1699. For by reaſon of this disjunction it happen'd, that, if theſe patients were mov'd, the bones, and their epiphyſes, were heard to rub againſt each other. Which obſervation is one of thoſe, otherwiſe very few, obſervations, that are wanting in the medical treatiſe of the celebrated Hertius, *de Crepitu Oſſium*; for he has diligently collected whatever elſe is extant in authors upon this ſubject, interſperſing the obſervations of his father alſo now and then: although we want the light of diſſections in determining the cauſe of this diſorder, as happens in moſt perſons.

But if we attend to the queſtion, it ſeems that this cauſe ought more frequently to be plac'd, agreeably to the opinion of Hertius, in a kind of exſiccation, than a moiſture and laxity.

Nor did it ſeem otherwiſe to me, when you conſulted me for a matron of the firſt rank, who, at the end of her fifth time of child-bearing, began to perceive a kind of troubleſome crackling of the bones in her knees, while ſhe turn'd herſelf from one ſide to the other; and ſometime after that in all the joints of both her upper limbs: yet in ſuch a manner, that it was the moſt troubleſome in her knees, in conſequence of being join'd with a conſiderable pain in the extenſion of her legs.

For how could I deduce from laxity alone, that which was join'd with pain. As I therefore had recommended ſuch remedies, both internally and externally, as would moderately moiſten and relax tenſion; in the following year, when ſhe conſulted me again, there were no longer any complaints of that crackling of the bones, no more than if they had never exiſted; but as ſhe had been wont before that, to be ſubject to very conſiderable hypochondriac affections, ſhe complain'd of theſe only.

35. Whether the vertebræ are moſt eaſily broken, or luxated, is a controverſy among the moſt eminent men, which I have taken notice of in a former letter (*t*). And, in regard to the uppermoſt of them, why; though I formerly did not want frequent opportunities of examining into this circumſtance, in the bodies of hang'd perſons; I did not examine into it, I have ſaid in the ſame place.

(*q*) Vid. adnot. ab Hallero ad c. 4. P. 13. Meth. Stud. Medic. Boerhaav.
(*r*) Eph. N. C. Dec. 3. A. 4. Obſ. 1.
(*s*) Mem. de l'Acad. R. des Sc. A. 1699.
(*t*) Epiſt. 19. n. 14.

Since that time I have not had the opportunity. And in regard to the other vertebræ, though Valſalva and I have both of us inſpected them, after the moſt violent blows, neither of us have found them luxated; but both have found them broken: as you have already learn'd from the fifty-fourth (*u*) and fifty-ſecond (*x*) letters. Yet if two obſervations, on a ſubject like this, ſeem to you too few; add to them three of the celebrated Tabarranus (*y*); who, with his uſual ſkill and diligence, has not only examin'd other things, but this in particular.

This author did not always find the vertebræ mov'd from their places: and when he found them mov'd at all, he did not ſee them to be ſo much mov'd from their places in general, as to allow him to believe they were luxated; but he always found them broken. Nor do I ſuppoſe that you will here propoſe to me the obſervations of our Veſlingius (*z*) and Pujati (*a*).

I very well remember that the former of theſe authors had ſeen ſome of the vertebræ of the back mov'd outwards, in a ſlight degree, in a certain woman, a native of Dalmatia; and in a man, a native of Padua, all the vertebræ of the loins remarkably inclin'd outwards, with a ſtupor of the inferior parts. So I alſo remember that the excellent Pujati had ſeen in others, and, what I bore with great diſpleaſure, on account of the affection which I juſtly entertain'd for him, in himſelf alſo, the ſuperior lumbar vertebræ prolaps'd outwardly; and not without torpors of the legs.

Yet I remember, at the ſame time, that both of them had aſcrib'd thoſe ſubluxations to internal cauſes, vitiating the ligaments. But the diſcourſe that I have undertaken relates to thoſe luxations which are ſaid to happen from external violence, when the body and the ligaments are in a natural and healthy ſtate: which I do not take upon me to deny; although, as particularly in the caſe of the celebrated Targioni (*b*), in whatever manner you endeavour to conceive of it, the explication thereof is very difficult; but I do not very well know, whether it is demonſtrated by the diſſection of dead bodies, that theſe luxations happen without a fracture of the vertebræ.

I have formerly read a hiſtory, which was ſaid to be written by Bellini, of a maſon, who, falling from an upper ſtory of a houſe, and receiving a blow upon his loins, either in falling, or from the ground, began to loſe the ſenſe of feeling in his feet, and to diſcharge the contents of the inteſtines and bladder involuntarily, and to have the other ſymptoms that are deſcrib'd.

As this man died after four days, the three uppermoſt vertebræ of the loins were found to be ſo luxated, as to be prominent a finger's breadth into the cavity of the belly; and therefore to compreſs the large trunks of the veſſels in ſuch a manner, as to bring their oppoſite parietes into mutual contact: from which it happen'd, among other things, that all the veins, from both the extremities of the feet quite to the luxation, were turgid with blood, and hard, juſt as if they had been ſtuff'd up by force.

(*u*) n. 26.
(*x*) n. 34.
(*y*) Obſerv. Anat. poſt n. 7.
(*z*) Epiſt. 25.
(*a*) Dec. Medic. Obſ. 6. n. 10. & ſeqq.
(*b*) Semiluſſaz. delle vertebre lombari nella I. Raccolta d' Oſſervaz. Med.

In

In this caſe who can doubt of the luxation of the vertebræ? We would rather doubt whether the external force, which could overcome the ligaments, had not broken the vertebræ? and whether this had not, perhaps, by breaking them, been equally injurious to the ſpinal marrow, and its appendix, with the luxation itſelf? But of theſe things, that is of inſpecting the vertebræ with attention, and the medulla itſelf, among ſo many other circumſtances that are deſcrib'd, not the leaſt mention is made.

Thus in the fourth book of the Sepulchretum, and in the third ſection of that book (*c*), an obſervation of Fontanus is extant (for the obſervation of Panarolus, of luxations, which is in this ſixth ſection (*d*), relates to the ſuperior vertebræ; nor is it ſufficiently certain, as I have ſaid elſewhere, whether the luxation was without a fracture; and even, as I ſhall ſhow juſt now, whether it was a true luxation), in which obſervation of Fontanus, we read, indeed, that a porter who had fallen from a high place, with his back upon a piece of timber that lay beneath, had "diſlocated and looſen'd" the *vertebræ dorſi*; in conſequence of which his body was curv'd. and his face turn'd towards the ground as long as he liv'd.

But when his body was examin'd after death by diſſection, and particularly his back, inſtead of knowing, as you would expect, whether thoſe vertebræ were broken, or not, you are told nothing about this, but only that five vertebræ were ſeen to be "conglobated into a gypſum," the viſcid matter which adher'd to them "being converted thereto by a kind of natural inſpiſſating heat."

Nor do I know that there are other diſſections in the Sepulchretum, beſides theſe, that relate to the preſent ſubject: you now ſee therefore, whether it is with reaſon we wiſh that the queſtion had been more frequently and diligently enquir'd into by our predeceſſors.

That obſervation of Fontanus may, at leaſt, give room for a ſuſpicion, whether thoſe, or whether other vertebræ, may not be prominent ſometimes; not from a luxation, but from a matter, which an external or internal cauſe may produce around them, and indurate; from whence not only the nerves, that ariſe therefrom, are preſs'd upon, but the adjacent muſcles which are deſtin'd to the extenſion, or flexion, of the body, and even the vertebræ themſelves, are impeded and diſturb'd in their actions and uſes.

And in proportion as the nerves ſhall be leſs hurt, or the life of the man protracted to a greater length of time, the greater room will be given for this ſuſpicion, or any other of that kind: which, eſpecially in an unuſual affair, Panarolus ought to have remov'd, when he ſpoke of the ſecond vertebra of the neck being luxated, and that "by a very great luxation" too; and nevertheleſs ſaid that the man "had liv'd in this manner for a great number of "days:" for it was not enough to ſay that this "was obſerv'd from the diſ-"ſection of the dead body;" but it ought to have been added, with accuracy, to what ſide the vertebra was luxated; and whether he had not found ſome of the ligaments, at leaſt, to be ruptur'd from that violent fall, if not the vertebræ itſelf; or its dentoid proceſs broken.

(*c*) Obſ. 28. §. 1. (*d*) Obſ. 1. §. 1.

But, on the contrary, I commend the moſt excellent Trew (*e*), who, having ſaid that he had ſeen the firſt vertebra of the loins "a little luxated" in a man, has not fail'd to ſay, that the body of the ſame vertebra "was "divided quite through by a longitudinal fracture:" and has aſſerted that, in another man, "the body of the left vertebra but one, of the back," was found, by him, "to be entirely pull'd away from its cartilage, at its con-"junction with the laſt; and not only this, but alſo that it was ground into "ſeveral little pieces at the ſame place."

And I could wiſh that others, when they met with the fifth vertebra colli luxated to the left ſide, and the ſixth to the right ſide, a great aperture being interpos'd betwixt both (*f*); or when they found the ſecond vertebra of the neck "diſlocated," though not ſo much in a boy of ſeven years of age (*g*), as in a ſoldier (*h*); had taken time to enquire, accurately, whether there was any part broken in thoſe vertebræ, but particularly in the ſecond; and what part; or whether there was any rupture in the ligaments.

In ſaying of which I do not call into queſtion the veracity either of Panarolus, or of any other perſon: I only require diligence when there is opportunity; and even expect it (*i*) from thoſe who ſhall happen to light on ſuch caſes for the future.

36. But as to what I have ſaid of the motion of the muſcles which extend or bend the vertebræ, or of the vertebræ themſelves being impeded; this is common to other bones that are join'd together by a moveable joint. For as to what relates to the muſcles, you might have ſeen from our obſervation above (*k*), that the leg, for inſtance, was inflexible, by reaſon of too ſtrong an action of the muſcles which extended it; whereby the action of the flexor muſcles was impeded.

And, on the other hand, you will perceive, from the obſervation and monitum of Caſpar Hoffmann (*l*), that the leg ſometimes cannot be extended, in conſequence of being prevented by the oppoſite muſcles; which, by reaſon of the negligence of the ſurgeons, and their very ſtreight bandages, are at length dried up, in the ham, into a hard knot. And that, when the muſcles are not impeded in their action, the motion of the bones themſelves is impeded for this reaſon, that though they ſhould be no more than one in number, they are become one; you have examples in this ſixth ſection of the Sepulchretum (*m*): and not only in the knee, but alſo in the elbow; and even in all the joints of the body of an old man, from the head quite to the extremities of the toes.

In this old man the vertebræ had coaleſc'd with each other, as well as the reſt of the bones; but in other old men, this coalition was peculiar to the vertebræ, from the obſervation of Paawius (*n*). So, long before him, it had

(*e*) Act. N. C. Tom. 2. Obſ. 51.
(*f*) Commerc. Litter. A. 1738. Hebd. 40. II.
(*g*) A. 1734. Hebd. 11. poſt n. 6.
(*h*) A. 1740. Hebd. 52. n. 3.
(*i*) Vid. infra, n. 37.
(*k*) n. 26.
(*l*) Comment. in Gal. de Uſu Part. in fin. l. 3.
(*m*) Obſ. 3. §. 3. & Obſ. 4. §. 3. & 2.
(*n*) Ibid. §. 1.

been

been ſeen in the vertebræ of the loins, in particular, by Cattus (*o*): and our Falloppius (*p*) has ſaid, that the vertebræ, "which produce a gibboſity, are "ſo connected together in proceſs of time, as to become quite one vertebra, "and leave no trace of any joint."

But I do not ſo much wonder, that thoſe obſervations have not been added to the Sepulchretum, as that the more ſurprizing, and more known, obſervations of Ruyſch (*q*) have not been added: for Ruyſch not only obſerv'd the ſame thing in gibbous bodies, but this alſo "many times;" that the bodies of the vertebræ, which had been curv'd forwards, were ſo compacted into one ſubſtance, that ſome of theſe bodies ſeem'd to have been annihilated; and ſometimes four, or ſeven, bodies of this kind of vertebræ made into one bone, ſo as ſcarcely to equal the body of one vertebra.

After theſe, I purpoſely omit other obſervations, eſpecially thoſe that I have referr'd to elſewhere (*r*), together with thoſe of Ruyſch, though in a brief manner, of the vertebræ being join'd into one, both from the ancients and moderns; not to ſpeak of my own, as I ſaw five vertebræ lumborum join'd together thus, that were found in the burying-ground of this hoſpital, and preſerv'd by our Mediavia. For I ſuppoſe that what has been hitherto ſaid of fractures of the bones, luxations, and other diſorders injurious to motion, will ſeem to you to be quite ſufficient. Farewel.

37. Thus far had I written, when, among the many diſſertations which that illuſtrious man Albertus Haller lately ſent to me with great kindneſs, and according to his cuſtom, I read, with great pleaſure, one relating to what I have juſt now touch'd upon in regard to the luxation of the vertebræ, publiſh'd at Tubingen by the celebrated profeſſor Mauchart, in the year 1747.

In this diſſertation, that very ingenious man inquires into the luxation of the neck; and, in the firſt place (*s*), ſays, that there was "not even the "ſhadow of a luxation," in the vertebræ of the neck of any one of all the bodies which he had diſſected, after their being publicly hang'd, notwithſtanding the executioners had very violently, and for a long time together, preſs'd their heads forwards: and he declares below (*t*); which I would have you compare with what we have ſaid in the nineteenth letter (*u*); that in two young men, one of whom he diſſected, and the other the celebrated profeſſor Weiſſius, that the muſcles had been lacerated by the halter; in the firſt, the ſterno-thyroidæi, not to mention the ſterno-hyoidæi; and, in the ſecond, theſe and the ſterno-maſtoidæi; and, in the ſame body, that the cricoid cartilage was broken into many little pieces; and the trunk of the aſpera arteria entirely torn away from the larynx.

But as to what relates to other external violences; as, for inſtance, to blows, falls, and ſuch-like accidents; he denies that there is extant any certain and accurate obſervation of a luxation of the firſt vertebra, from the

(*o*) Iſagog. Anat. c. 3.
(*p*) Præfat. ad Tract. de Lux. & Fract. Oſſib.
(*q*) Obſ. Anat. Chir. 67.
(*r*) Epiſt. 27. n. 32.
(*s*) § 5.
(*t*) § 16.
(*u*) N. 8. & 13.
(*x*) § 9. & 11.

head,

head, as far as he knew: though he had turn'd over more than fifty celebrated writers of ſurgery, and chirurgical obſervations.

And of the receding of the ſecond vertebra from the firſt, and of the fourth from the fifth, he produces, in all, two examples (*y*), which well deſerve reading; as many monita alſo do, that relate to luxations of theſe vertebræ; as, for inſtance, that they are deceiv'd (*z*), who do not doubt but the ſecond vertebra is luxated from the firſt, when the point of the finger may be inſerted betwixt both; as if, in fact, this could not happen naturally: and that ſo much the more, if the ligaments, which lie betwixt, have ſuffer'd any conſiderable violence in extenſion: and, in like manner (*a*), that the ſecond vertebra cannot be luxated forwards, unleſs by a ſurpriſingly great, and almoſt incredible impetus, the very ſtrong ligaments of the dentoid proceſs be ruptur'd, or the proceſs itſelf broken.

I omit other things: for you very well perceive, even from what has been already ſaid, whether it is with juſtice that I have complain'd (*b*) of many things being omitted by Panarolus, in his deſcription of a luxation of the ſame vertebra.

And, certainly, if you ſuppoſe that the firſt vertebra cannot be luxated from the head; it muſt, of courſe, be an obſtacle to the tooth-like proceſs of the ſecond vertebra, either by its anterior bony arch, which prevents it from being carried forwards, or by its very firm tranſverſe ligament, which prevents it from being carried backwards, with the ſecond vertebra when impell'd, ſo that this vertebra ſhall be luxated; unleſs either the ligaments are ruptur'd, or the dentoid proceſs itſelf broken: and you ſee it will happen nearly in the ſame manner, when you obſerve what lies in the way of the tooth-like proceſs laterally, if you ſhould chuſe to ſuppoſe this vertebra to be luxated to either ſide.

For my diſcourſe was of true luxations of this kind. Of which kind I could wiſh that they had been in the two examples of Mauchart: for although he ſays, that he could introduce his thumb betwixt vertebra and vertebra; yet, in the firſt, he even expreſsly denies (*c*) that there was "a true luxa-"tion." And I even wiſh that the firſt example had been from his own obſervation, and not from the obſervation of a certain neighbouring phyſician; for in that caſe mention would have been made of the ligaments being ruptur'd, or of the bone being fractur'd, or not fractur'd: which deficiency is not in the ſecond; yet if, inſtead of being merely preſent, he had perform'd the diſſection in this, there would have been no doubt whether the ligaments had been lacerated by the violence of the fall, or by the knife: and the vertebræ being examin'd very accurately, both internally and externally, it would have been now much more certain, that there was no fracture of the bones.

For which reaſon it is to be wiſh'd, from him in particular; both in regard to thoſe vertebræ, and all of them; that according to the occaſions which may preſent themſelves for the future, this controverſy may be totally deter-

(*y*) § 11. & 12. (*b*) Supra, n. 35.
(*z*) 15. (*a*) § 10. (*c*) § 16. in fin.

min'd;

min'd; and the anatomical doctrine of the ligaments may at the ſame time be completed; wherein, not only I have obſerv'd that ſome things ſtill remain to be treated of, more accurately, after Weitbrecht; but Mauchart, by that peculiar ſkill and accuracy which he is remarkable for in diſſection, really ſhews, in the diſſertation entitled "The Articulation of the Head with "the firſt and ſecond vertebra."

And theſe few things I was willing to ſay, by way of poſtſcript to this letter; leſt, becauſe the copies of that other diſſertation, ſubſequent to what I juſt now mention'd, are very ſcarce in Italy, you ſhould be ignorant what ſo great a man has thought, or ſeen, in regard to the luxation of the upper vertebræ. Once more farewel.

LETTER the FIFTY-SEVENTH

Treats of the Gout, and other Pains of the Joints.

1. I HOPE you will not be greatly ſurpriz'd at my not treating, here, of the impediments to lying down on the back, or the ſides; and producing very few obſervations that relate to the gout; when you have conſider'd the two next ſections of the Sepulchretum, and the thing itſelf. For as to patients not being able to lie in a ſupine poſture, or on their ſides; this generally happens from diſeaſes, on which you have often receiv'd other letters from me, that take no leſs notice of the troubleſome ſymptoms, or inconveniencies, wherewith thoſe diſeaſes are join'd, than of the diſeaſes themſelves.

For this reaſon, the ſeventh ſection alſo, that is allotted to the treating of theſe impediments, in the Sepulchretum, is very ſhort: not becauſe hiſtories are wanting which relate to the ſubject, but becauſe almoſt all of them, having been already produc'd, each in its proper place, are refer'd to here in three words, by pointing out the place where they may be read at pleaſure; in the ſame manner as the ſixteenth, the twentieth, the twenty-firſt, the twenty-ſecond, and the thirty-eighth letters, may be pointed out to you by me, in preference to other letters.

As the gout is generally a diſorder of the rich, and very ſeldom of the poor; and the carcaſes of the latter, not of the former, are deliver'd to anatomiſts; or as, if at any time the bodies of the rich are to be open'd, the viſcera only are ſubjected to examination, for the moſt part, and ſcarcely ever the limbs; it happens from hence, that obſervations which properly relate

relate to the gout, are far more rare in the books of anatomiſts, than thoſe of a great number of other diſeaſes.

For this reaſon it is, that but few could be transferr'd into this eighth ſection of the Sepulchretum, that treats of the gout; which ſection, therefore, is, for the moſt part, made up of ſcholia: and out of thoſe few obſervations which it does contain, ſome had been already produc'd in the preceding books; and you will find, that the laſt which is added had been already propos'd by Bonetus himſelf a little before, in that ſame ſection; and what is ſtill more, even in the immediately-foregoing page; and in ſo many words; if you compare it with the eleventh obſervation, and its ſcholium.

I, however, am ſtill reſolv'd to repeat no hiſtory, though I might take occaſion to repeat many from Valſalva's, and from my own. When it becomes neceſſary to bring back to your memory any of theſe obſervations, I will point out the letters in which you may read them. Here you will have very few indeed; but then they will be what I have not ſent you on any former occaſion.

2. A woman was frequently afflicted with iſchiadic pains, at the joint of the femur, on the right ſide; on which ſide ſhe was lame, and ſomewhat gibbous. At length, ſhe was firſt ſeiz'd with a palſy, and after that with an apoplexy; which carried her off before the end of January, in the year 1741, at the time I was reading anatomy in the college: to which place the body was carried from the hoſpital.

The belly being open'd, the omentum appear'd to be ſtretch'd down almoſt to the pubes. And in attempting to turn this up, we turn'd up, at the ſame time, the inteſtine colon, which was curv'd towards the lower part of the belly, and adher'd cloſely to the omentum. That is to ſay, the ſeat of this inteſtine was different from what it generally is. For, beſides that the beginning of it, as well as the cæcum, was lower in the belly than it generally is; when it had aſcended from that beginning, almoſt quite to the liver, it was reflected downwards from thence, into the upper part of the hypogaſtrium, in the form of an arch; and aſcended upwards from hence, very high, by a curvature quite ſimilar, into the left hypochondrium: and in the whole of this arch, as has been already ſaid, it was firmly tied to the omentum.

Both of the Falloppian tubes were ſhut up at their uterine orifices. The oſculum uteri was not ſurrounded by any corona on the back part. The vagina was ſhort. The ſpace from the glans clitoridis, alſo, to the orifice of the urethra, was ſhort; ſo as not to be equal to the breadth of a little finger. The trunk of the great artery, which is in the belly, ſent out the ſuperior meſenteric artery of a larger ſize than the cæliac: and was diſtinguiſh'd in ſeveral places internally by whitiſh ſpots. The other veſſels we did not examine; theſe parts being replac'd by better from other bodies; and we fearing leſt our confinement, as to time, ſhould prevent us from examining the head.

I have already told you, on a former occaſion (*a*), what kind of thyroid

(*a*) Epiſt. 50. n. 31.

gland

gland I met with in going on to the muſcles of the neck, the remaining part of the trunk, and the limbs: and what kind of joint of the right os femoris, with the acetabulum, I found, I muſt now tell you; agreeably to my promiſe in the preceding letter (*b*); only firſt making this remark, that the bony ſinus, wherein the right ſcapula receiv'd the head of the os humeri, had its edge manifeſtly deficient, where it ſhould have approach'd, with its anterior ſide, to the upper part.

The head of the right os femoris was not rounded into a globular form: and was depreſs'd, and not cover'd by a ſmooth and white cartilage, but by one of a pale aſh-colour: and, indeed, this cartilage was totally deficient in the poſterior part of the head; ſo that the bone appear'd naked in that part, and form'd into many roundiſh and protuberant particles.

The internal ſurface of the acetabulum was bloody: and the ſupercilium thereof, as it is call'd, had two bony laminæ buried within its natural cartilaginous and ligamentous ſubſtance; which laminæ were not ſmall, and lay near to each other.

3. Fernelius (*c*), indeed, judg'd that an arthritic humour "never, or very "ſeldom," penetrates into the cavity of the joints, but only falls upon the ſurrounding ligaments, membranes, and tendons; making uſe of this argument, amongſt others, that in the tophaceous podagra, or chiragra, the humour, which is already concreted into a calculus, is, for the moſt part, taken out from the joints of the fingers, or toes, the capſular "ligament "being ſound and unhurt."

But others, afterwards, as you will learn from the Sepulchretum (*d*), ſeem to have attempted ſomething more than Fernelius; ſince they endeavour to prove, that even the tendons, which are inſerted into the joints, have either "no ſenſation at all, or a very obſcure one:" and that this gypſeous matter is indeed, at length, collected near the joints, by reaſon of other additional cauſes, but not always; as it is met with in other neighbouring parts. In the woman in queſtion, however, who was ſo tortur'd with iſchiadic pains, I found no diſorder near the joint; but all of it within the joint.

Yet we do not deny that this tartareous matter concretes, alſo, near to the joints; as in that prieſt in whom Valſalva (*e*) found it immediately under the ſkin, in the membrane that enwraps the tendons of the fingers. Nor ſhall I make any objection, if they ſhould chuſe to underſtand the words of Aretæus (*f*) in the ſame manner: "In the joints, alſo, tophaceous bodies are "form'd: in the beginning they appear like abſceſſes: but afterwards they "are more inſpiſſated, and when the humour is concreted, it is even dif-"ficult to bend the joint: at length, they become white and ſolid tophi."

And I will even refer you to the obſervations of our Sanctorius (*g*). His words are as follow: "I have ſometimes ſeen, that in a certain old knee-"gout, a gypſeous pituita, ſimilar to a liquid lime, had flow'd down to the "ſkin; upon the perforation of which it was diſcharg'd in that liquid ſtate:

(*b*) Epiſt. 56. n. 16.
(*c*) Patholog. l. 6. c. 18.
(*d*) Sect. hac 8. in Schol. ad Obſ. 1.
(*e*) Epiſt. 40. n. 2.
(*f*) De ſign. & cauſ. diuturn. morb. l. 2. c. 12.
(*g*) Comment. in 1. F. 1. l. Can. Avic. D. 4. c. 1. t. 1.

" ſtirr'd up by which experiment, I once made uſe, in the caſe of a knee-
" gout from a gypſeous pituita, of the dripping of water from unwaſh'd
" wool, in which mallows, creſſes, and other herbs of the emollient kind,
" had been boil'd; and, after a long interval, I made ſome portion of that
" gypſeous pituita, which lay under the ſkin, liquid and ſoft; and evacuated
" it from thence, by cutting into the ſkin."

This curative experiment I was not willing to omit here; although it did not eſcape me (*b*), that the calcarious matter of gouty joints had been " re-
" ſolv'd by warm water alone," but when taken out of the body, as I ſuppoſe; and that from thence hopes were conceiv'd, that by means of frequent draughts of lime-water, to which ſoap is added, it would happen that this matter ſhould be diſſolv'd in the very joints of gouty bodies: and I could wiſh this hope might have been more juſt, if the ſucceſs could prove, that as great a quantity of this water was carried into the joints, as was carried into the bladder.

We therefore grant to thoſe, whom we have referr'd to in the Sepulchretum, that near the joints alſo, and that not uncommonly, a tophaceous matter is collected. And I moreover even add, that it is ſometimes collected far from the joints; as we have ſeen in a tumour of the breaſt of a gentleman (*i*), whoſe grandfather and father had been afflicted much with the gout, he himſelf not having been wholly free therefrom.

But we cannot, for this reaſon alſo, approve what they aſſert: that as the capſular ligaments ſhut up the cavities of the joints, and as " no paſſage lies
" open " thereto, nor any vein enters theſe places, the gouty humour cannot be carried within them. For there is the ſame paſſage, into theſe cavities, for this humour, as for the mucilage that lubricates the cavities: and that the glands which ſecrete this humour, are furniſh'd with their little arteries, is not only demonſtrated by reaſon, or injections; but even by the eyes themſelves, when unfurniſh'd with glaſſes, and looking upon thoſe reddiſh and ſlender flaps of theſe glands. Wherefore, when the blood is loaded with tartareous particles, theſe particles may be depoſited in the cavities of the joints, by means of theſe ſame veſſels, together with the mucilage; as well as by means of other arteries about the tendons, and membranes, which lie adjacent to the joints.

And theſe particles concreting into tophi, and little ſtones, by gradually drawing aſunder the bones, and by diſſolving the ligaments, " break the
" joints," as Perſius (*k*) ſays of " the ſtony chiragra;" or as Cælius Aurelianus (*l*) ſays of theſe gouty " ſtones, they looſen the joints, and diſtend the
" ſkin, and by burſting forth become prominent, and are taken out by
" the hands of the ſurgeon:" all which circumſtances I have ſeen, and particularly in the joints of the fingers of a certain Venetian nobleman.

Nor will you have any room left to doubt, whether they are really form'd within the very cavities of the joints, when you read the obſervations re-

(*b*) Vid. § 11. Diſſert. cit. Epiſt. 42. n. 19.
(*i*) Epiſt. 50. n. 45, 46.
(*k*) Sat. 5. v. 59.
(*l*) Morb. Chron. l. 5. c. 2.

counted

counted in the Sepulchretum, from Harderus (*m*), Schneider (*n*), and Dobrzenſky (*o*).

4. Yet it is not always neceſſary, that the tartareous particles ſhould enter the cavities of the joints, together with the mucilage, in order that arthritic affections may be there produc'd. It is ſufficient, if you attend to Boerhaave (*p*) on this head, that the mucilage itſelf, if not attenuated by a proper attrition, and for that reaſon not abſorb'd, " ſtagnates a conſiderable time " in the joints, " and becomes acrid by this very ſtagnation." For by this means it produces the moſt violent pains: and " frequently theſe very great " diſorders ariſe merely from a ſedentary kind of life."

And to this other things ought to be added, which we reckon among the cauſes either of diminiſh'd attrition, or of difficult abſorption, or of both; I mean moiſt cold, which injures the natural tone of the joints in a great degree, and that ſo much the more eaſily, becauſe the cartilages and the ligaments, of which they are compos'd, and the tendons wherewith they are moſt of them cover'd, are not furniſh'd with a great number of ſanguiferous veſſels, if compar'd with moſt other parts; and theſe veſſels are certainly very ſmall; for which reaſon it happens that they are more ſubject to cold; and eſpecially in thoſe joints which are very much expos'd to the injuries of the cold, as in the feet.

We muſt likewiſe add preſſure; as, for inſtance, from tight ſhoes, from whence many of the reſorbent veſſels are either made too narrow, or quite obliterated: and this ſo much the more eaſily, as they are preſs'd againſt the very hard parts of which I have ſaid that the joints conſiſt.

Other cauſes are, the diſtance from the heart, from whence the impulſe in propelling the humours is very languid: the eaſy and perpendicular paſſage through which the ſame humours are to be carried: the indulgence us'd during the pains of the affected parts, in which delicate patients remain even much longer than there is occaſion: a lenteſcent and viſcid ſtate of the mucus, either from morbid cauſes, and in particular from gluttony, drinking, or venery, or from any parental taint; whereby the abſorbing veſſels are alſo ſtreighten'd, and there is a weakneſs of the propelling fibres: and other circumſtances of the like kind.

A great number of which I have enumerated, becauſe I have obſerv'd that ſome perſons in deſcribing them from Hoffman (*q*), (in whoſe works almoſt all theſe circumſtances are taken notice of) without making any mention of this author, have omitted ſome things that ought not to be paſs'd over; whether we undertake to explain nothing elſe but what Hoffman has done, that is to ſay, why the feet are, more frequently than other parts, ſeiz'd with the gout; or even why, and that in the beginning alſo, ſome other part is ſeiz'd therewith.

For in fact; as is ſaid by Cælius Aurelianus (*r*); " the arthritic pain " takes its beginning from the feet ſometimes, and ſpreads to the other

(*m*) Sect. hac 8. poſt. Obſ. 2.
(*n*) Obſ. 3.
(*o*) Obſ. 5.
(*p*) Prælect. ad Inſt. § 258.
(*q*) Medic. Rat. Tom. 4. P. 2. S. 2. c. 11. Theſ. Pathol. § 16.
(*r*) c. 2. paulo ante cit.

" joints; and ſometimes beginning in the other joints, attacks the feet af-
" terwards." And thoſe joints which are not only in more frequent motion than others, but, at the ſame time, ſubject to fewer of thoſe cauſes that I have enumerated, ſcarcely ever, or never, are ſeiz'd with the gout: nor do I remember ever to have heard, or read, that thoſe joints were thus affected, whoſe obſolete memory I have endeavour'd to reſtore, by ſhewing that there was no part deficient in them, by reaſon of their ſmallneſs, that was given to the larger joints; for we have evidently demonſtrated (*s*) thoſe very ſmall joints, that are interpos'd betwixt the cricoid and arytenoid cartilages, to be ſupplied with a membranous capſular ligament, with the flap of a mucilaginous gland, and with mucilage.

But thoſe joints are chiefly affected by adventitious morbid cauſes, which are ſubject to moſt of thoſe other cauſes that I have mention'd; I mean the joints of the feet: wherefore, when ancient authors (*t*) ſaw an epidemical gout, ſo that eunuchs alſo, women, boys, and girls, and flocks of goats, in like manner, were affected therewith; it was that foot-gout which attack'd the inhabitants of the place promiſcuouſly, for twenty years together.

But it was leſs ſurprizing that two illuſtrious young men of fifteen years of age, who began to labour under the gout, ſhould have been known to Braſavolus (*u*); as I myſelf have ſeen little children, who were ſeiz'd with ſevere pains of the joints, and greatly diſorder'd thereby, before they had well got out of their infant-ſtate: and have, at the ſame time, known that their father, grand-father, and great-grand-father, had been ſubject to the gout.

5. And how acrid the mucilage of the joints ſometimes becomes, by ſtagnating in their cavities, is ſufficiently argued, I think, from the bloody appearance of the acetabulum of the woman in queſtion (*x*), and from the eroſion of the head of the femur. But when the acrimony has come to this pitch, do you think it poſſible that the hip-gout may be cur'd by any internal or external remedy?

I certainly do not think it is: not even if you make uſe of " the laſt and
" moſt efficacious remedy in inveterate diſorders;" for thus, I believe, we ought to read the words of Celſus (*y*); " by ulcerating the ſkin, in three or
" four places, upon the hip, by means of red-hot irons;" not to mention other and milder kinds of cauteries beſides, that were us'd by Hippocrates (*z*), ſuch, and many more, as are taken notice of by Cælius Aurelianus (*a*); among which is this alſo, that was likewiſe us'd by Hippocrates, and which ſeems, more than any other, to have correſponded to the *moxa* of the Indians, I mean a kind of fungus that was ſet fire to at the upper part: all which kinds of burning Cælius; although he acknowledges them to be " moderate by their gentle penetration;" nevertheleſs poſtpones to other remedies, on account of being attended with a great deal of uneaſineſs,

(*s*) Adverſ. Anat. 1. n. 15.
(*t*) Vid. apud Donat. de Medic. Hiſt. Mir. l. 1. c. 8.
(*u*) Vid. ibid.
(*x*) n. 2.
(*y*) De Medic. l. 4. c. 22. Vid. Epiſt. 6. noſtram in Celſ.
(*z*) Vid. apud le Clerc. Hiſt. de la Medic. P. 1. l. 3. c. 28.
(*a*) l. cit. 5. c. 1.

and

and forbidding the uſe of thoſe remedies, " as the ulcerated parts cannot " bear the application of them."

But burning, in order to contract and corroborate relax'd parts, has its uſe; and ulceration of the ſkin, in order to carry off, and eliminate, from the internal parts of the body, ſome portion of the morbid matter which has fallen thereupon, has its uſe alſo: wherefore you will not think a mild burning of this kind, and timely applied, a remedy entirely to be rejected in ſome caſes; eſpecially when you call to mind, not only the cures of the ancients, but alſo ſome more modern cures, that have been ſucceſsfully perform'd thereby.

You will think much the ſame of ſome other remedies. " So great," ſays Arantius (*b*), " is the efficacy of glyſters, in the hip-gout, eſpecially " when incipient, that I have reſtor'd many, who were grievouſly affected " therewith, to their former health, without the application of any other re- " medy beſides theſe." And the firſt glyſters which he propoſes you will, without doubt, readily approve, as they do not greatly differ from thoſe that Cælius (*c*), who has been ſo often mention'd by us, recommends; " whereby " the internal parts, being fomented and moiſten'd with vapour, conſent in " a univerſal relaxation."

But where thoſe firſt glyſters have not been ſufficient, Arantius preſcribes another kind, and that, as he himſelf acknowledges, a ſtrong purging clyſter. Will you then reject them all entirely through fear of irritation? Nay, where there are thoſe cauſes and thoſe bodies that he ſuppoſes, you will make uſe of ſome other kind of glyſter, if you do not make uſe of that, whereby to obtain the ſame purpoſe.

And certainly, if you read the more ancient, or more modern, phyſicians than Arantius, you will find that there are many teſtimonies which agree with his. Thus Montagnana (*d*) ſays, that iſchiadic pains, " by the teſti- " mony of all prudent phyſicians, are cur'd by acrid glyſters." And Riverius (*e*), after other clyſters being frequently applied, at length propoſes acrid ones alſo; ſo that you may perceive him to be very manifeſtly of the ſame opinion with Arantius.

Moreover Etmuller (*f*); to omit others; not only ſays that clyſters are ſuitable, and particularly when repeated; but adds this: " and it is neceſ- " ſary that they ſhould be acrid." Who then dare ſuſpect, that what ſo many very experienc'd profeſſors ſo greatly recommend, has not anſwer'd ſometimes with them? This remedy therefore has ſometimes its uſe.

But at other times there is room for thoſe glyſters which Cælius approv'd, or others that act in a different manner; among which I know that thoſe have ſometimes been of advantage, that have been prepar'd from water wherein the *os pernæ* had been boil'd: even more than glyſters made up of elaborate pharmaceutical preparations, not to ſay of preparations equally cheap.

(*b*) l. de Tumor. p. n. cap. 63.
(*c*) c. 1. cit.
(*d*) Conſil. 257.
(*e*) Prax. Medic. l. 16. c. 2.
(*f*) Prax. l. 2. S. 2. c. 3. art. 8.

Yet

Yet I ſhould ſuppoſe that ſome of them were compos'd of ſuch things as were uſeful to the nerves, that lie near to the inteſtinum rectum; which, deſcending behind the os iſchium, ſome conſider'd as the ſeat of the iſchiadic pain: eſpecially from the time Coiterus (*g*) had ſaid, that, he had found the ſpace betwixt the lower part of the ſpinal marrow, and its dura mater, through which thoſe nerves are carried, to be "frequently fill'd with a thin "ſerum, in arthritic, iſchiadic, and podagric patients; and ſometimes with "a viſcid pituita." And this obſervation is transferr'd into the Sepulchretum (*h*), though not quite in the words of Arniſæus, who takes notice of it; yet this I am the more careleſs about, becauſe a fluid of the ſame kind is found in thoſe alſo, who have not labour'd under a diſorder of this nature.

6. And I muſt think the ſame of purging medicines, and of bloodletting, as I have thought of glyſters. For as to what relates to bloodletting, to ſay nothing of the opinion of thoſe, we ſuppoſe that the iſchiadic gout is from a vain effort of nature, in attempting to expel the ſuperfluous blood, by the way of the hæmorrhoidal veſſels; certainly the more ancient authors have led the way to the obſervations of thoſe perſons: among which more ancient authors is Joannes Zecchius (*i*), who has ſaid, in dependance upon reaſon and experience, that blood taken from thoſe veins "is, in "a ſurprizing manner, ſerviceable to iſchiadic patients."

The ſame author relates ſtill more ſurprizing things of the very ſpeedy ſolution of this diſorder, if the vein which lies upon the external ankle, on the ſame ſide, be open'd: and this is confirm'd by an almoſt ſimilar obſervation of Riverius (*k*). Who will deny that theſe authors had ſeen what they ſay they had ſeen? But would you attempt that in a very weak conſtitution, and one that has but little blood, which it is natural to ſuppoſe had ſucceeded with them in a robuſt and full habit; or in one that had become iſchiadic from a ſuppreſſion of the hæmorrhoidal flux?

I alſo know that you would not give purging medicines to an arthritic patient whoſe body is extenuated, and ſtrength decreas'd; or whoſe nerves may be eaſily drawn into conſent: or, finally, to one whoſe ſtomach is of ſuch a nature, as eaſily to be injur'd therefrom.

Yet I do not ſuppoſe you therefore think, that every purging medicine is, at all times, and in all conſtitutions, injurious. For if this were the caſe, moſt of the more ancient phyſicians would never have prevented, or got rid of, the gout, even when it was incipient; as they aſſert that they had gain'd both theſe points, by the uſe of purging medicines in particular.

I am prevented from mentioning each of them ſeparately, by their follower, Demetrius Pepagomenus, phyſician to Michael Palæologus; who, by the command of his maſter, wrote a little book on the gout, which has been printed at Padua in my memory, as the work "of an uncertain author," and not to be had ſeparately from large volumes: whereas; to ſay nothing of the more ancient edition; it had been publiſh'd ſeparately at Paris, in the year 1558, and not without the name of the true author; as alſo at

(*g*) Obſerv. Anat.
(*h*) Sect. hac 8. Obſ. 6.
(*i*) Conſult. Med. 43.
(*k*) Cent. 2. Obſ. Med. 25.

St. Omers, in the year 1619, Joannes Bergeſius publiſher; who, I ſuppoſe, would not have given himſelf the trouble to turn the French verſion of Jamot into Latin, if he had not been ignorant of its being publiſh'd in Greek and Latin at Paris, and of its being elegantly tranſlated into Latin by Marcus Muſurus.

If you therefore turn over this book, even haſtily, you will immediately ſee how much this Greek phyſician, as a follower of thoſe ancient Greek phyſicians, attributed to purging remedies, in curing, and preventing, the gout.

But leſt you ſhould imagine this to have ſucceeded in the country of Greece only, and object to me that a phyſician of great note, in our time, aſſerts every kind of purging, even "by means of lenient medicines;" not to ſpeak of ſtronger remedies; to be for the moſt part injurious to gouty patients; whether you mean to cure the preſent paroxyſm, or prevent a future one: and that even he had found it, by experiments made upon himſelf, as well as upon others, ſo little to anſwer his wiſhes, "that it invited "and increas'd the very evil which it was expected to prevent, and to cure;" leſt then, I ſay, you ſhould object theſe things to me; I will oppoſe to you two phyſicians among our countrymen, who were very famous when living; who were themſelves gouty, and had tried purging on themſelves; I mean Marcus Gatinaria and Petrus Bayrus.

The former of theſe gentlemen (*l*) having made uſe of evacuation every month, for the ſpace of two years, and made uſe of reduction by abſtinence twice a week, ſays, by theſe means "I certainly was cur'd, and have never "been afflicted with the gout ſince." And Bayrus (*m*) having already labour'd eight or ten times under the moſt violent pains in all his joints, ſo as not to be capable of moving any other part beſides his tongue; and being again afflicted therewith; could, upon taking his own electuarium caryocoſtinum, walk on the ſame day, and the day after was free from diſorder: and this experiment he made twice afterwards with the ſame ſucceſs.

And in fine, after having made uſe of the ſame medicine three or four times a year, whenever he began to perceive any ſigns of plenitude, he ſays, "it is now more than ſix-and-twenty years ſince I have been at all troubled "with theſe pains; and this experiment I have made not only upon myſelf, "but upon a very great number of patients; and that with the ſame ſuc-"ceſs;" and this electuary, of which he ſpeaks, is the ſame that our Capivacci (*n*) ſaid "deſerv'd the higheſt commendations," in the gout, "as "had often been prov'd by experiment."

I have ſpoken thus at large of Bayrus, leſt you ſhould ſay, that the purgings, made uſe of by Gatinaria, had ſucceeded ſo well, becauſe he began juſt then to be troubled with the gout; and beſides, through the whole ſpace of two years, drank little or no wine: although I know a learned man who, being troubled very much, and for a long time, as his brother was alſo, with the gout; and having tried all other things, and amongſt theſe water-drinking,

(*l*) Vid. apud Donat. c. 8. ſupra ad n. 4. cit.

(*m*) De medend. hum. corp. malis Enchir. Diſt. 19. tr. 1. c. 1.

(*n*) Conſil. Medic. a Scholz. edit. 232.

inſtead

inſtead of wine, for a year together; gain'd not the leaſt advantage thereby, and even became weak and emaciated, till he began to make uſe, every day, before his ſparing ſupper, of one of the *Pilulæ Melanogogæ Langelotti:* by means of which pills he had ſtools that were, for the moſt part, mucous, but not in great quantity.

For, by theſe means beginning to be better, he went out from home: and I ſaw him afterwards walking firmly, and expeditiouſly, without any ſtaff or ſupport; being of his former habit of body, and in good health; at which time he took one of thoſe pills only every fifth day.

Nor is it to be doubted, but the moſt modern writers in medicine, would, if they had not well-known inſtances of this kind, have, themſelves alſo, forbid every kind of purging to gouty patients: and indeed they do not approve very violent medicines of this kind, eſpecially in the paroxyſm; but they recommend the more mild purgers, when the paroxyſm is at hand, and even when it is incipient; and ſtill more to prevent other paroxyſms.

7. In regard to the milk-diet alſo, as it is call'd, it is certain that we ought to conſider of it again and again, before we preſcribe it to arthritic patients; leſt it ſhould happen to be injurious to an impure body, or one that is liable to hypochondriac affections: or ſhould be of more detriment than utility to a weak ſtomach. And, indeed, the moſt eminent phyſicians have aſſerted, that this utility is very precarious, and of ſhort continuance; even in thoſe who bear milk well: and that ſoon as ever the milk-diet is omitted, and they return to the diet of healty perſons, although mild and gentle, the gout returns, and troubles them far worſe than before; or that, in the ſtead of it, the moſt violent internal diſorders come on, which are ſoon after follow'd by death.

However, neither every kind of milk, nor milk taken in every way, of courſe leaves theſe inconveniences behind it; as, for inſtance, if it be given to thoſe with whom it agrees: and not milk only, but other proper foods alſo; nor too great a quantity of theſe foods be given at the ſame time; in the ſame manner as we do, not uncommonly, in other diſorders.

At leaſt, among the obſervations which Daniel Puerarius, as I ſuppoſe, added to the obſervations of Thomas Burnet (*o*), there is one of a count, who, when his ſtomach was not able to bear the farther uſe of milk, liv'd upon puddings made with milk and ſugar, and chickens fed with bread ſoak'd in milk; by which means returning to his former method of living, he was, indeed, ſubject to very ſlight pains of the joints, and ſuch as could be eaſily got rid of, but not to ſuch as he had been formely troubled with.

And "not a few" other perſons of gouty habits, having taken milk about the ſpace of two years, "indulg'd themſelves afterwards in drinking "freely of wine without any diſadvantage." Thus far he. But Cornelius Celſus (*p*) has deliver'd down to us in his writings, "that ſome gouty pa-"tients, having cleans'd themſelves univerſally, by the uſe of aſſes-milk, "had eſcap'd this diſorder for ever."

(*o*) Theſ. Med. Pract. l. 1. S. 40. in fin. (*p*) De Medic. l. 4. c. 24.

And

And Pliny (*q*) has confirm'd this by ſaying, "There are examples of thoſe "who have been freed from the hand-gout, or the foot-gout, by drinking aſſes-milk." Which paſſage, I ſee, is copied in the annotations to the *Conſilia* of Ballonius (*r*), not without a remark, how a eaſy remedy of this kind, and one proper to correct the acrimony of the arthritic ſerum, ſhould be omitted by the phyſicians of that time.

And when different things were objected by different perſons to thoſe who, after that, renew'd the Hippocratic uſe of milk againſt this diſorder; Lodovico Teſti aroſe, an excellent old man, and an intimate friend of mine, who found out a method of uſing milk that was liable to leſs difficulties; by inventing the ſugar of milk, as he call'd it. The ſucceſsful effects of which were prov'd by many perſons, both among our countrymen and foreigners; yet when the author was dead, the uſe of his invention ſeem'd, I know not how, to decreaſe.

8. But do not expect that I treat of quickſilver in like manner, the uſe of which, ſo as to excite a ſalivation, has been recommended by ſome authors againſt this difficult diſorder, among other remedies, as Etmuller (*s*) will ſhew you; though ſome in a different manner from others, among whom is the celebrated Pujati (*t*).

For I will not ſpeak of this remedy more particularly here, than of diaphoretics, and of the more bitter or heating herbs: not only to prevent prolixity, but alſo that I may ſay no more of theſe remedies than of others; I mean, that they may ſometimes have their uſe; and that, at other times, they are not only uſeleſs, but even injurious; and eſpecially the more violent kinds.

I therefore remember that, when a certain phyſician was relating to me, that he, by giving quickſilver to gouty patients, who were moreover affected with a lues venerea, having promoted a plentiful ſalivation, had driven away the lues indeed, but had not in the leaſt diminiſh'd the cauſe of the gout, as they continu'd to be attack'd therewith no leſs violently than before; I remember, I ſay, to have anſwer'd, You have reaſon to be content that their fits have not been more violent.

And although in this diſeaſe, as well as in others; not to ſay more in this; we ought to uſe the feweſt and mildeſt medicines we can; and though this is the plan I have always purſu'd; yet if, at any time, ſome peculiar cauſes require a remedy which we ſhould otherwiſe avoid, we muſt give credit to Boerhaave (*u*), who writes, in regard to the gout, "that whatever "remedy is moſt oppoſite to the cauſe from whence the diſorder had its "origin, this is, in every one, the greateſt and beſt remedy;" eſpecially where this ſeems to agree with the conſtitution of the body which we endeavour to cure. And hence it is, that ſome medicines which have been ſuſpected by many phyſicians, have been of great uſe in this diſeaſe.

Thus; to ſpeak a little of external medicines alſo; how uſeful in preventing and curing the pains of the joints, the oil from the roots of the

(*q*) Nat. Hiſt. l. 28. c. 9.
(*r*) L. 2. Conſ. 3. Annot. 4.
(*s*) Prax. art. 8. ſupra ad n. 5. cit.
(*t*) Diſſert. de Hydrarg. n. 51. & ſeqq. & in fin.
(*u*) Aphor. de cogn. & curand. morb. 1280.

cinnamon-tree has been, appears from the *Tranſactions*, as they are call'd, of the Royal Society of England (*x*). Thus, how many and various things, that have given eaſe to theſe pains, when externally applied, do we meet with in turning over the writings of phyſicians.

To ſpeak only of fat; I remember that the fat of frogs, hedge-hogs, geeſe, wether-ſheep, and dogs, have been recommended. I have alſo ſeen that of aſſes ſometimes preſcrib'd by Albertini, which you will find mention'd by Paullinus (*y*), and yet not for this purpoſe. Will you ſuppoſe, then, that becauſe any one of theſe things has been ſometimes of uſe to ſome perſons, it muſt be ſuitable to all perſons, and at all times?

It is certain, that Albertini applied the fat of aſſes, in a certain iſchiadic man, who was neither affected with very great pain, nor inflammation. But, at other times, in order to aſſuage the pains of the joints, as far as it was proper, he made uſe of no other remedies than what moſt of us make a practice of uſing; yet, in every one of them, he chiefly made uſe of that wherewith every one us'd to be eas'd: as, for inſtance, a piece of freſh beef, chang'd twice a day; or, to take notice of a thing which I have nowhere read of, but was us'd to a ſenator of Bologna, with great advantage; a rag moiſten'd with the juice preſs'd out from the leaves of elder, and ſlightly warm'd.

I know, indeed, that the flowers, or tender ſtalks, of elder, or even the leaves themſelves, but join'd with other things, have been recommended by the Greek (*z*) and Latin (*a*) writers; yet the ſimple juice of the leaves I do not remember to have ſeen recommended.

9. But theſe external, and thoſe internal remedies, likewiſe, whereof we have ſpoken; and others that are recommended by authors; whether they have been uſeful to any perſon, for the reaſon which was juſt now pointed out, or have been applied, by accident, near the decline of the diſorder, which ſometimes comes on much ſooner, of itſelf, than it generally does; or even (which I would have you underſtand, in particular, of thoſe medicines that are call'd preſervatives) whether the health which is aſcrib'd to their uſe, would be more juſtly aſcrib'd to the exact method of living which is order'd to be obſerv'd, at the ſame time, for a long while (both of which circumſtances Cælius Aurelianus (*b*) ſuſpected alſo: and Celſus (*c*), and others, teſtify the ſecond, even of itſelf, to have brought "a ſecurity from "the diſorder, through the whole courſe of life"); this is certain, that moſt of them have either never been at all uſeful. or, at leaſt, very little, to moſt perſons: and that ſome of them have thrown patients into very great danger, or have brought on the cauſe of their death.

Therefore, if you compare all the circumſtances I have taken notice of, with the diſorder of that woman (*d*) whoſe hiſtory led us to theſe remarks; you will readily conceive how few things could have been of any uſe (for as to perfect health, after the bone was in part corroded and deſtroy'd, that

(*x*) Saggio delle Tranſaz, &c. Tom. 4.
(*y*) L. de Aſino, S. 4. c. 3. § 12.
(*z*) Dioſcorid. de Med. Mat. c. 168.
(*a*) Scribon. Comp. Medic. 160. Samonic. de Medic. c. 42. Marcell. de Medicam. c. 36.
(*b*) C. 2. ſupra ad n. 3. cit.
(*c*) C. 24. ſupra ad n. 8. cit.
(*d*) Supra, n. 2.

could

could not be expected); and, on the other hand, how many would, without doubt, have been very injurious.

Among these you will reckon those, also, that I have not yet mention'd, but only had a view to; I mean, such things as repel the arthritic matter already deposited about the joints, or beginning to be deposited, force it inwards to the veins, and prevent it from being deposited, (then or afterwards) by astringing the small vessels that carry it to the joints, and unseasonably corroborating the fibres. For how much injury it may do when excluded therefrom, may be even conceiv'd from the utility which it very often brings with it, when admitted thereto.

See, for instance, how the disorders of the hearing with which a gentleman was troubled, and to which other remedies gave no relief, us'd to be entirely remov'd by the gout coming on; and return when the gout went off; as Reusnerus (*e*) remark'd: and how the wife of Gerbezius (*f*) was wont to have a severe pain, for a long time, in her breast and stomach, till she was immediately freed therefrom by the appearance of the gout.

But why do I seek examples from these, and other writers, (that could furnish one with so many) of the utility of this disorder, which I have experienc'd in myself. For when I was afflicted with that inflammation of both eyes, whereof I have formerly made mention (*g*), which now almost approach'd to a chemosis, and had made use of other remedies in vain; and I myself thought, and my friends confirm'd the opinion, that blood-letting should be delay'd no longer; it came into my mind to try, before I had a vein open'd; for I never had been bled, nor ever have been to this day, though I am now in my seventy-ninth year; to try, I say, whether bathing the feet with warm water, and using gentle frictions thereto, would be of any advantage.

And I had not done this for more than two evenings, before a pain, which came in the very joint of the right toe with the metatarsal bone, shew'd that the gout was at hand: and this pain, being increas'd slightly in the night-time, immediately diminish'd the inflammation of my eyes; and in a few days took it off.

This gout was very mild, as I had never had it before, and my parents and ancestors had not been subject thereto; nor did I feel any thing of it afterwards for five years, at the end of which period it appear'd in the left knee, but in a very slight degree; so that the effect of this pediluvium, in bringing on the gout, was similar to that in the young man whose history I see in the *Commercium Litterarium* (*h*), but the gout very dissimilar in its violence: nor is this to be wonder'd at: since he; to omit other things; did not make use of a milk-warm bath, as I did, but of one extremely hot.

However, in proportion as the gout is of advantage, when the joints afford a free admission to it; so much injury does it bring on the other parts, when the joints will no longer admit it. And though this might be confirm'd by innumerable observations, many of which you may see, if you please,

(*e*) Eph. N. C. Cent. 5. Obs. 8.
(*f*) Earund. Cent. 8. Obs. 6.
(*g*) Epist. 13. n. 24.
(*h*) A. 1741. Hebd. 25. n. 1. propius fin.

in the volumes of the Cæſarean Academy, and particularly Dec. 3. A. 5, & 6. Obſ. 55; it will be ſufficient for me to take notice of one from him whom I frequently and deſervedly commend; I mean, Hippol. Franc. Albertini (*i*).

For a goldſmith, who us'd to labour under the gout, every year, and had more than once driven it away by anointing his feet with petroleum, when the diſeaſe was at hand; fell into many more violent diſorders, which would not be put to flight, unleſs by diſcharging a great quantity of matter from the inteſtines; which, that you may readily perceive it to have been of a gouty kind, was made up "of lime, or gypſum, as it were, lately cemented "together."

This matter, therefore, when excluded from the corroborated joints, frequently falls upon the parts that are contain'd in the abdomen, the thorax, or the cranium; bringing on preſent danger, and frequently death. And the ſame things happen when any internal cauſe prevents the matter from being carried to the joints; and particularly a decreaſe of vital power. And this you may not only argue from two obſervations that I have ſent you heretofore (*k*), but you will more evidently learn from the following.

10. George Corneli, cardinal of the holy Roman church, and biſhop of Padua, having been, for a long time paſt, extremely ſubject not only to pains of the joints, but to pains of the kidnies alſo; and being now free from theſe pains, no calculi appearing any more, and the diſcharge of urine being greatly diminiſh'd; ſeem'd to be falling into a dropſy, and perhaps was really ſo; but that a very powerful diuretic, which was given him, caus'd a great quantity of urine to be diſcharg'd.

At that time, not the leaſt calculus was ſeen: nor for many years afterwards was there any ſymptom of the kidnies being affected; notwithſtanding he travell'd in his chariot through a long and rough road, and had changes of horſes for the ſake of diſpatch; I mean, in the year 1721, when he went from hence to Rome. and from Rome to Padua again.

However, though the nephritic pains did not trouble him in thoſe years, he was not, for that reaſon, free from the arthritic complaints; but theſe returning now and then at times, were even the more violently and frequently troubleſome to him, becauſe, by reaſon of his being of a fat habit of body, and but weak in his lower limbs, and by reaſon of his advanc'd age, he was prevented more and more every day, from making uſe of his wonted exerciſe.

To theſe complaints were added a continual coſtiveneſs for a long time together, a heavineſs of the head, and of hearing after that, together with a propenſity to ſleep; and, finally, frequent ſwoonings. In this manner having ſcarcely paſs'd his ſixty-fourth year, he at firſt loſt his appetite for all kinds of food; and then was attack'd with the arthritic paroxyſm: and now his right hand, and his left knee, began to ſwell, when he receiv'd the melancholy news of the fatal diſorder of his moſt ſerene brother Giovanni, Doge of Venice, whom he ſincerely lov'd.

(*i*) Comment. de Bonon. Sc. Inſt. Tom. 1. in Opuſ. de Cort. Peruv. haud ita procul a fin.

(*k*) Epiſt. 25. n. 10. & Epiſt. 40. n. 21.

From

From this time he, though in other reſpects a man of a great mind, was ſeiz'd with incredible grief and uneaſineſs; and ſoon after, not only the gouty matter ceas'd to be expell'd to the joints, but even that which had been expell'd return'd into the veins, and brought on a ſtreightneſs and oppreſſion of the præcordia, a difficulty of breathing, and beſides theſe a kind of ſudden paroxyſm; wherein the functions both of the brain and heart failing, death ſeem'd to be at hand.

Then his ſenior phyſician, and thoſe who were preſent, either of relations or friends, haſtily ſent for me into conſultation. I found the patient, however, a little recover'd in the mean time; but ſo unlike himſelf in mind, as well as body, that I was immediately ſtruck therewith, and call'd to mind that prænotion of Hippocrates (*l*): "To do any thing contrary to cuſtom "is a bad ſign."

For he who before, in the moſt difficult affairs, was never wanting to himſelf, or to others, had entirely given up all hope of life, as I perceiv'd from his words; in which he adviſ'd us not to attempt to relieve him by our vain endeavours: nay, he even commanded and aſk'd it; and this, in particular, he begg'd again and again of me, while I was feeling his pulſe, and conjur'd me by that great regard and friendſhip which he had always borne me.

His pulſe, as I then and afterwards perceiv'd, was very bad; for it was very weak, and generally intermitted after two ſtrokes, but always after a few ſtrokes. It was manifeſt, that, unleſs the peccant matter could be recall'd to the joints, the patient could not be ſav'd. Yet it was not leſs evident, that the difficulty of recalling it, in that dejection of ſtrength, would be very great; and particularly as he was firmly perſuaded in his own mind, that every thing was to no purpoſe.

I, therefore, ſaid apart to thoſe to whom it was my duty ſo to do, that he was in the greateſt danger: and I took care that this ſhould be immediately ſignified, by a running footman, to his brother's ſons at Venice, in letters dictated by me. However, nothing was at that time, or afterwards, omitted, out of all the things that we had determin'd to do; or, at leaſt, as far as the ſtrength of the patient would permit, and we could prevail upon him by intreaties to ſubmit thereto.

And now the knee began to ſwell again; on which day we obſerv'd the pulſe to be grown a little better. But nature ſoon after growing languid, every ſymptom grew worſe; and the difficulty of breathing increas'd: his head was more and more oppreſs'd with ſleep: and not only the internal parts, but the limbs alſo, were ſeiz'd with convulſions; though we did every thing in our power to prevent it. And in this manner that moſt excellent cardinal, that beſt of prieſts, and great encourager of learning, was ſnatch'd away on the tenth of Auguſt, in the year 1722; at which time nearly, his brother alſo, who was the beſt of princes, and ſubject to the gout in the ſame manner, was carried off likewiſe; all good people being griev'd at the fate of theſe unhappy brothers.

(*l*) In Coac. n. 1. apud Marinell.

As

As the body was to be embalm'd on the following night, in order to have the funeral-rites perform'd after the manner of his anceſtors; I ſent a pupil of mine, who was well practis'd in diſſection, to take out the viſcera, and examine them attentively; for I could not bear to be preſent myſelf. From this pupil, therefore, and from the phyſician whom I ſpoke of before, I ſoon after made every proper enquiry in regard to the appearances. And this is the ſubſtance of what both of them related.

The belly, which was very fat, had its meſentery, and the ſmall inteſtines, loaded with a great quantity of fat: the ſtomach was large; but the coats thereof were greatly extenuated: the liver itſelf was in a natural ſtate; but the gall-bladder was ſmall, and the coats of it ſo thin and flaccid as to be broken by the touch; a round calculus falling out, which was not ſmall in proportion to the ſmallneſs of the veſicle, and was the only one contain'd therein, and that without any bile.

The kidnies were larger than they naturally are, but the right was the largeſt; ſo that, together with the fat whereby it was cover'd, it was almoſt equal to the ſize of a man's head. Therein were eleven ſtones, moſt of them large and ramifying. In the left was one, and that alſo was ramified and ſmall.

Theſe calculi, in their colour and branches, reſembled nothing more than black coral; for they brought them to me that I might look at them; but they could not have been ſeen by thoſe who have hinted, that they were ſimilar to the ſtones which Alghiſi (*m*) has delineated in his third table. However, that ſubſtance of the kidnies which lay next in order around them, was hard and callous.

Upon opening the thorax, nothing was found in the lungs that was preternatural; but the trunk of the aſpera arteria had its cartilages very hard, and not eaſily yielding to the hand, when conſtringing them. Which ſpecies of diſorder was alſo obſerv'd in the iliac arteries, and in the neighbouring trunk of the aorta, from whence they ariſe. Nor was it wanting within the thorax; but there the more the great artery receded from the heart, the more manifeſt it became. And this artery was much broader within the thorax than it ought to have been.

In the heart was no polypous concretion: and but a very ſmall portion of blood, and that frothy. Nor was there much blood in the whole body; if you except the integuments of the head, in cutting into which a pretty conſiderable quantity of blood flow'd out.

The cranium being open'd, beſides the ſerum which was obſerv'd therein, the whole ſubſtance of the cerebrum was lax to a very great degree.

11. Too many and conſiderable diſorders, beſides thoſe that were manifeſt, lay hid in this body, to ſuffer the arthritic matter to be thrown back upon the joints, either by nature or by art. It is true, the laxity of the cerebrum appear'd, in great meaſure, from the preceding ſymptoms of heavineſs of the head, and of hearing, and the propenſity to ſleep.

But would you have ſuppos'd it to be grown ſo lax, as to be already almoſt unfit for performing its principal office, and very fit for receiving a

(*m*) Litotomia.

quantity

quantity of arthritic ſerum; from whence thoſe external and internal convulſions, to which the ſtreightneſs of the præcordia, and the very great difficulty of breathing, as the lungs were in other reſpects unhurt, (for neither did Joerdenſius (*n*) find any thing morbid within theſe viſcera, in a caſe almoſt ſimilar) were to be attributed.

And with what force could the great artery, that was wider than uſual, and had its coats very hard; as the iliac branches of it had alſo; impel the peccant matter into the upper and lower limbs? It was certainly more likely to retard, now and then, the motion of the blood; from whence not only thoſe deliquia, but that laſt attack, and the intermiſſion of the pulſe, are to be accounted for: eſpecially ſince the heart was greatly debilitated, as appear'd from the weakneſs of the pulſe, and not without reaſon; inaſmuch as the ſtrength of the heart could not be preſerv'd by ſuch a brain as that was.

To this was added, that, though the heart was weak, and the arteries, in their ſtate of hardneſs, had by no means ſtrength equal to circulate even the beſt and moſt vivid blood; they were under a neceſſity of propelling an effete and impure blood: for this was ſhown to have been ſuch, not only by the latter part of his life having been paſs'd without any exerciſe, or agitation of body, but alſo by the many preternatural appearances found in the belly.

For, in the firſt place, the ſtomach, in ſo lax and extenuated a ſtate, could not well prepare the aliments. And, in the ſecond place, the inteſtines were not able to prepare the chyle; as no bile was now diſcharg'd from the veſicula fellis, and only a ſmall quantity, and that not good, had, for a long time, flow'd down; the former of which circumſtances was prov'd by that ſmall bilious calculus, and the latter by the ſmallneſs of the cyſt, and the long-continu'd coſtiveneſs of the inteſtines: and you readily perceive how far this aſtriction of the bowels was likely to prevent the purgation of that impure blood.

And as to the purgation finally, which blood of that kind certainly needed, if any at all did, as that is made principally by the ſkin, and by the kidnies; this was not done ſo much by the ſkin, in a quieſcent ſtate of body: and who can ſuppoſe that it was ſufficiently done by the kidnies, which were ſo oppreſs'd, and in part callous?

Nor does it eſcape me, who took notice of the cauſe thereof, upon a former occaſion (*o*), and particularly confirm'd it in fat perſons; nor does it eſcape me, I ſay, that calculi of the kidnies are often join'd with the gout; and I even know that, on account of theſe calculi, the blood of arthritic patients is leſs purg'd; and that by theſe means the gouty matter is encreas'd. Yet I would not have you infer from hence, that, in all theſe perſons, this matter could not be ſo well propell'd to the joints: or if it ſhould have happen'd to recede therefrom, and fall upon the internal parts, that it cannot be recall'd to the joints.

And indeed, I remember, that in the ſenator of Bologna, whom I took

(*n*) Act. N. C. Tom. 4. Append. n. 5. in fine § 5.

(*o*) Epiſt. 40. n. 3. & 5.

notice of above (*p*), and who was troubled with calculi of the kidnies alſo; beſides the gout; when the knees and hands began to ſwell, and ſoon after, of a ſudden, and without any manifeſt cauſe, the pain and the tumour vaniſh'd almoſt totally, and a conſequent difficulty of breathing alarm'd every one; I remember, I ſay, that in this patient however, the peccant matter was recall'd to the joints by Albertini, by means of the ſame remedies we made uſe of here to no effect.

But then the age was not the ſame, nor had the ſenator any grief to oppreſs his mind; nor thoſe diſorders of the brain, and the great artery: and although calculi did not fail to be diſcharg'd now and then, yet they were not to be compar'd with thoſe of which we are at preſent ſpeaking.

12. For, in the firſt place, theſe reſembled the form of coral. Which it is neceſſary you ſhould attend to, not ſo much for the ſake of admiration, as for knowing their cauſe and effect. For you will read in the Sepulchretum, that calculi were found in the kidney, which reſembled the ſhape of a mouſe (*q*); not to mention thoſe which reſembled the form of coral (*r*). And Euſtachius, who gave almoſt the firſt obſervation of all, of a calculus in the form of coral, has ſufficiently ſhown the cauſe of a figure of this kind (*s*). According to which, Piccolhominus (*t*) has afterwards explain'd the form of a mouſe alſo, in a calculus deſcrib'd by him.

And if the hiſtory thereof had been transferr'd into the Sepulchretum from the author himſelf; the readers would not have been ignorant after what ſymptoms it had been found. Therefore, as the calculous matter ſtagnates in the pelvis, and the beginning of the ureter; it is by that means moulded into the figure which reſembles the body and head of the mouſe; or which reſembles a ſtump of coral: and as it ſtagnates, at the ſame time, in the tubuli that open into the pelvis; ſo the calculi repreſent the tail and legs of a mouſe, or the branches of coral.

When the urinary paſſages are all, or moſt of them, beſet with calculi in the manner I have mention'd; and the very ſmall and contiguous inſtruments whereby the urine, if ſeparated from the blood, are compreſs'd; you certainly ſee that the ſecretion, and excretion, of the urine muſt be diminiſh'd; or the laſt altogether intercepted: and unleſs aſſiſtance be brought by nature, or by art, or by both, that a dropſy muſt begin to come on, or ſome other great diſorder ariſe.

You ſee then, from what cauſe the dropſy had begun to ariſe in the very eminent man in queſtion, when the urine being urg'd on by a very ſtrong diuretic remedy, the obſtructed paſſages were partly clear'd thereby, but the paſſages which were not as yet beſet with calculi, were immoderately dilated; and this was the chief part of the effect: ſo that the urine flow'd plentifully then, and afterwards; nature lending her aſſiſtance at the ſame time, as ſhe, after that, ſent the matter, which would have added new branches to the calculi, more frequently, and in greater quantity, to the joints.

But although ſome tubuli were preſerv'd in an open ſtate, and even wider

(*p*) n. 8. in fin.
(*q*) l. 3. S. 22. Obſ. 26. § 6.
(*r*) Ibid. Obſer. 21. § 4. & ſeqq. & S. 25. Obſ. 20. & S. 28. Obſ. 26.
(*s*) Vid. § 4. cit.
(*t*) l. 2. Anat. Prælect. 23.

than

than naturally; yet many remain'd entirely uſeleſs, being entirely full, and ſtopp'd up with branches of calculi: and what is more to be attended to, the ſubſtance of the kidnies, which lay neareſt round about them, was render'd hard and callous together with them, by continual compreſſion.

And this was the reaſon, why no uneaſineſs was perceiv'd in the kidnies, even from the greateſt agitation of body; eſpecially as the very cloſe adheſion of the tubuli to the branches of the calculi, prevented theſe from being agitated: as you will learn from the Sepulchretum (*u*), that it had done in others, when great ſtones, ſimilar to coral, and "driven in like nails or "ſpikes," adher'd immoveably in the kidnies.

But ſo many parts of the ſubſtance of the kidnies being made callous, and for that reaſon uſeleſs, can we ſuppoſe that the function of theſe viſcera had ſuffer'd no detriment?

Beſides, theſe calculi were not only in great number, but large; ſo that, of courſe, the remaining ſubſtance of the kidnies would be partly over-loaded, and partly diſtracted. And the parts which were thus over-loaded and diſtracted, certainly could not perform their office perfectly, in ſeparating the uſeleſs and noxious particles from the blood, which at other times they are wont to do. Finally, theſe calculi were in the body of a man, in whoſe gall-bladder another was contain'd; and conſequently in that body which needed more the ſeparation of thoſe particles, as is hinted above (*x*).

Nor am I ignorant, indeed, that calculi of the gall-bladder may alſo be produc'd in the ſame bodies that are liable to calculi of the kidnies; but have even confeſs'd it formerly in another letter (*y*), wherein I have made mention of thoſe found in this very eminent cardinal: nor is any thing more eaſy for me, than to produce a great number of obſervations, of thoſe perſons who have found them in both places at the ſame time.

For beſides ſo many others, that you will find taken notice of by me in other places (*z*); and beſides that remarkable one which is referr'd to by the celebrated Pohlius (*a*), and might be added to the Sepulchretum; I remember to have read ſix in the Sepulchretum, and all theſe in the third book (*b*): among which is one of Grembſius, that agrees with the one I have here given in this circumſtance likewiſe, that "no gall" was found in the gall-bladder. But none of theſe perſons, that I know of, was troubled with the gout: or if any one was troubled therewith, he, at leaſt, had not ſo many other conſiderable injuries of the veſſels and viſcera.

13. There are other diſorders alſo, which ſometimes ſhow themſelves in the joints; as, for inſtance, that which I ſaw in a woman, whoſe diſſection is, for more than one reaſon, worthy to be deſcrib'd to you on the preſent occaſion.

14. An old woman, who was the mother of many children, had been ſeiz'd with an apoplexy about three months before. This apoplexy had been ſucceeded by a paralyſis of both limbs, on the right ſide; yet in ſuch a man-

(*u*) Cit. Obſ. 20. & 26.
(*x*) N. 11.
(*y*) Epiſt. Anat. 1. n. 48.
(*z*) Epiſt. 37. n. 43.
(*a*) Diſſert. de Proſt. calcul. affect. §. 7.
(*b*) S. 22. Obſ. 1, S. 23. Obſ. 4. §. 10, S. 24. Obſ. 2. §. 12. Obſ. 6. §. 4. Obſ. 10. ſecunda §. 4, & S. 25. Obſ. 9. §. 5.

ner, that they could be mov'd a little, and had the faculty of feeling left entire. But laſt of all; when a kind of ſleepineſs, as it were, had come on, and a conſiderable heſitation of ſpeech; being brought into the hoſpital, ſhe there gradually ſunk away, and died: this was after the beginning of December, in the year 1746.

Of the many things which I obſerv'd in the courſe of ſeveral days diſſection, in this body, theſe are the principal that relate to the preſent ſubject.

In the belly, the uterus was ſo ſhort in its length, that even externally, from the orifice to the upper part of the fundus, it was ſcarcely equal to two fingers breadths. But it was wholly contracted into itſelf, and conglobated; ſo as to reſemble, in ſome meaſure, a kind of little ball, depreſſed on the fore-part and back-part, the parietes being thicker in proportion: and in cutting into the ſubſtance of theſe parietes I found it to be livid, and did not judge it to be perfectly ſound. The larger extremity of one of the tubes was not only impervious, but entirely grown into one ſubſtance with the teſticle, which, like its fellow, was hard, and in ſome meaſure chequer'd on its ſurface.

In the thorax, the heart contain'd large polypous concretions.

On the integuments of the ſkull, where they cover'd the left temple, a large blackneſs, as if from contuſion, appear'd externally and internally; although no blow had been receiv'd, upon the head, any little time before death, (as far as we could learn by enquiry) or ſoon after. In the whole left hemiſphere of the cerebrum, contrary to what the hemiplegia had given us reaſon to expect, no diſorder was found.

But in the right, I firſt obſerv'd that the veſſels which paſs through the pia mater, eſpecially where they correſponded to the vertex of the head, were very turgid with blood: and through the ſame membrane I ſaw water, as it were, mix'd with particles of air; and this water was really beneath: but in ſo ſmall a quantity, that the pia mater was not eaſily drawn off by the fingers. And after this I found a ſingular diſorder of the ſubſtance of the brain, and that a very conſiderable one; being about the vertex, to the extent of three or four fingers breadths, in the longitudinal direction of the head: and for as many in breadth, where the diſorder was the wideſt; for in ſome places it was much more narrow.

This diſorder began from that upper border of the hemiſphere, where it is neareſt to the left ſide, and extended itſelf, from thence, in breadth. From the ſurface of the cerebrum; which it occupied; it did not deſcend inwards more than an inch. In the whole of that ſituation then, which is mark'd out, both the ſubſtances of the cerebrum were of a faint and browniſh blood-colour; and not leſs ſoft than if it had been, for a long time together, cut, and in a manner chopp'd with a knife, ſo as to become almoſt fluid. Yet it was no where fœtid.

But the remaining part of the cerebrum; except that, if you compar'd it with the cerebellum and medulla oblongata, it was more lax than theſe parts; offer'd nothing that was preternatural, even upon the moſt diligent enquiry; ſo that I did not find any ſerum extravaſated in the ventricles, although I obſerv'd the pituitary gland to be very much contracted, and ſunk in its ſituation.

Finally,

Finally, as in the left knee (which was cut into, in order to demonſtrate the internal ligaments, cartilages, and glands, to a crowded circle of ſpectators, who had likewiſe ſeen all that has been ſpoken of above) I ſaw no mucilage; I began to inſpect all the parts very attentively, which, however, were pretty well lubricated: and I ſaw the cartilaginous cruſt of the rotula, in the part where it correſponded to the external condyle of the femur, rubb'd away, as it were, and mark'd with ſlight and ſmall parallel furrows; much in the ſame manner as if any one had preſs'd the point of a chiſſel, or graving-tool, upon it, and drawn the inſtrument from the top to the bottom ſeveral times: and the cruſt of the condyle, which I juſt now mention'd, where it was turn'd to the ſame part of the rotula, was ſo extenuated as to appear ſomewhat livid, by reaſon of the bone being ſeen through it.

But what was much more worthy of obſervation than all theſe things, was a great number of globules, the five largeſt of which were almoſt equal to ſmall grapes; the remaining globules, which were more than twenty, being ſome a little leſs, and ſome much leſs, than the former. All of them were white, and of a ſmooth ſurface: and all of them, being disjoin'd from each other, were prominent within the cavity of the joint; adhering by a very ſmall part, and even being continu'd, the leſſer of them to the capſular ligament, about the inferior ſides of it, (ſo that ſome of them were diſpos'd into an oblong ſeries) but the larger to a cartilaginous cruſt; or, rather, to the fimbria of a mucilaginous gland, which cloſely cover'd the cartilaginous cruſt, in ſome receſſes of the bones that belong to the cavity of the joint.

Yet others were entirely bony; and ſome contain'd a bony nucleus under a cartilaginous cruſt. I ſhould have examin'd the other knee likewiſe, to ſee whether any of the ſame appearances were there, and whether any thing there might better ſhew their origin; but I was diſappointed, as I found that this had been buried together with moſt of the other parts of the body.

15. But from whence-ſoever their origin was, this is certain, that, if they had grown out from the mucilaginous glands, they might, by diminiſhing the ſecretion of the mucilage, do an injury to the joint; or, if they were from any other part, and had not hitherto done much miſchief, (ſince this could not be known for a certainty) they would have been injurious, to a conſiderable degree, by their increaſe.

And, indeed, if any one ſhould happen to ſay, that ſome one of the ſmalleſt of thoſe bony globules was pull'd away from its ſituation by the agitation of the knee; and, being interpos'd betwixt the condyle and the rotula, had made thoſe appearances in the cartilage that are ſpoken of; he would not aſſert any thing that was utterly abſurd: although I remember, when, in the following year, I examin'd the knee of a man in the ſame place, to have found the cartilaginous cruſt of the ſame condyle corroded, as it were, in ſome meaſure, in that ſame part where it touches the rotula, though not for a larger ſpace than what the nail of a man's little finger could have cover'd; yet ſome other ſmall ſpaces in that neighbourhood were affected in the ſame manner: however, there was no appearance of diſorder in the rotula, nor any-where elſe in the whole joint; and ſtill leſs did any globules protuberate. The deſcription of which circumſtances I thought

leſs proper to be paſs'd over, becauſe I do not think I have read any author (*c*) who has made mention of a diſorder of this kind in the knee-joint.

Yet when I was reviſing this letter, there came out an obſervation of the illuſtrious Haller (*d*) upon another joint, which was pretty ſimilar to this. That is to ſay, in a decrepid woman; in whom many of the arteries, and ſome of the valves, of the heart, were not without bony ſcales, or the beginnings thereof; while he was inſpecting the joints of the lower jaw, with the bones of the temples, he obſerv'd one of them to be "ſtripp'd of its "cartilaginous cruſt; and the lunated cartilage almoſt half-conſum'd, and "perforated. And the cruſt, which attrition had deſtroy'd, the ſame attri-"tion had chang'd into almoſt twenty globules, half-bony, and collected "looſely in the cavity of the capſula." In the other joint there was nothing of this "wonderful appearance," but every thing was in a natural ſtate.

I ſhould have copied more to you, if he had added more, that you might have compar'd all the circumſtances with my obſervation. But it does not ſeem that it was in his power to learn, what, and how great, inconveniences the woman had ſuffer'd therefrom.

Nor have I read many authors, who have taken notice of that kind of corruption in the ſubſtance of the cerebrum, which I found in the old woman in queſtion, as I did nearly in a few others (*e*).

Moreover, a paralyſis of the body, on that ſide which lies beneath the injury of the brain, inſtead of being oppoſite to it, is not a very common thing. You may, therefore, add this obſervation to the few others which I have referr'd to heretofore (*f*), among the much greater number of oppoſite paralyſes, as if by way of ſome exceptions: unleſs you ſhould happen to ſay, that the injury here was either not ſudden, or too remote from thoſe parts of the brain, (I mean, the ventricles and the protuberances therein) to the ſudden injury of which, chiefly, the hemiplegia in the oppoſite ſide is obſerv'd to ſucceed.

Yet whether this can be ſaid of that obſervation which I have referr'd to formerly (*g*), as propos'd by Curti, a Neapolitan phyſician; it is, perhaps, not very eaſy to determine.

For to a reſolution of the right ſide, in conſequence of an apoplexy, he ſaw a correſpondent corruption of the ſubſtance of the cerebrum, (not far unlike that of which I was ſpeaking juſt now) not in the left, but in the right hemiſphere; and that in the whole of it; ſo that even the meninges were converted into a mucous ſubſtance: although, as he ſays nothing of the crura medullæ oblongatæ, which grow out into thoſe protuberances, there may ſeem to be ſome reaſon for doubt ſtill remaining.

16. There is, in fact, ſo great a ſimilarity betwixt the rheumatiſm and the gout, whereof we treat in this letter, that phyſicians have diſtinguiſh'd the former from the latter but lately; although not ſo lately, that this was firſt done about the middle of the preceding century, as ſome ſay who forget

(*c*) Vid. Epiſt. 69. n. 13.
(*d*) Progr. de indurat. corp. hum. partib. §5.
(*e*) Epiſt. 5. n. 6. & Epiſt. 9. n. 16. 18.
(*f*) Epiſt. Anat. 13. n. 25.
(*g*) Epiſt. 9. n. 19.

Ballonius (*h*). But no mention in particular is made of rheumatiſm in the Sepulchretum, not even in that place where it would have been moſt proper; I mean, about the end of the eleventh ſection of this fourth book, where it relates to pains "of the external parts."

Yet I do not wonder at it, as I ſcarcely remember to have lit on any other diſſection of a rheumatic patient, but that taken from the mouth of Drelincurt, and made mention of by Havers, in his Oſteology (*i*); in which diſſection Drelincurt found "a jelly concreted on the ſurface of the muſcles, equal to "two or three ducats in thickneſs." Which obſervation might be added to the part of the ſection of the Sepulchretum that I mention'd before; as it is very ſhort, and is made up, in good meaſure, of hiſtories which are produc'd in other places; and even ends in one that had been already given in this very page (*k*).

I, who have treated of things which relate to the other parts of the ſame ſection, in other places, will ſubjoin here, leſt I ſeem to have entirely omitted this laſt part, two obſervations of our Mediavia's; the firſt of which relates to pains of the external parts: and the other would have ſeem'd to relate thereto, if diſſection had not diſcover'd the caſe more clearly.

17. A young man, who was a goldſmith, had a violent pain in his loins, on the right ſide, which yielded to no remedy. A year being thus paſs'd over, the pain began to attack the left ſide of his loins alſo: nor was he free from pains in his neck, which ſeem'd rheumatic; when an inability of moving his legs came on, a hydrops tympanites, and finally death, about the middle of April, in the year 1753.

We were permitted only to cut into thoſe external parts of the body which had been the ſeats of that very obſtinate and violent pain of the loins. The ſkin, therefore, and the adipoſe membrane, being taken off from theſe parts; in the cells of which membrane ſome water was ſeen; and that large tendon, from whence the muſcle latiſſimus dorſi ariſes, being remov'd, and no mark of injury being obſerv'd in this tendon on either ſide; when we came to that thick fleſhy body which affords a common origin to the ſacro-lumbus and longiſſimus dorſi muſcles; behold! an unuſual colour appear'd in that body, ſuch as we ſee in old furniture made of the nut tree; and yet not in the whole of that body, but only for about the ſpace of five inches in length, and in breadth in like manner: and this was continu'd inwards, from the ſurface, in ſuch a manner, as to be ſeen in the ſubjected muſcles likewiſe; that is, the ſacro-lumbus and quadratus lumborum.

The fibres, in the whole of that ſpace which I have pointed out, were ſurprizingly lax and yielding, and disjoin'd by frequent coagula of blood lying betwixt them. And all theſe diſorders that I have ſpoken of, appear'd ſo much the more, in proportion as the muſcles were nearer to the ſpine: but without that ſpace in the loins, neither a preternatural colour, nor any thing preternatural, was obſerv'd in the muſcles. And, indeed, there was

(*h*) Vid. ejus librum de Rheumatiſmo, & quæſt. medic. illi adjectam.

(*i*) Diſc. 4. ubi de Rheumatiſmo.

(*k*) Obſ. 7. § 11. & 7.

no very diſagreeable ſmell in the part where theſe diſorders were obſerv'd. All theſe appearances were found in both loins; but thoſe in the left were much the ſlighteſt.

18. I am here aware that you will make two enquiries of me; one, from whence aroſe that inability of moving the legs? the other, from whence the pains in the neck? And, indeed, you will eaſily, of yourſelf, conjecture the cauſe of theſe pains; if, bearing in mind my obſervations (*l*) which I have confirm'd in the following years, you are not ignorant that the longiſſimi muſcles, whoſe origins we found to be diſeas'd in this body, were continu'd to the neck, in all thoſe bodies wherein I have made the enquiry.

And as to that inability of moving the limbs, perhaps, nothing forbids us ſuſpecting it to have ariſen from hence, that the diſorders obſerv'd in the quadrati lumborum muſcles, alſo, (and theſe ſo much the more conſiderable, as they approach'd nearer to the vertebræ) might, at length, have reach'd to thoſe nerves from which the crural are made up; not to ſay, to the pſoæ muſcles themſelves; as thoſe diſorders were continu'd from the external to the internal parts: for that they had not been propagated from the internal to the external parts, notwithſtanding we were not allow'd to examine the belly, appears from this circumſtance, that there were no complaints of the kidnies, and that no ſymptoms of any injury of theſe parts were taken notice of; and the legs were not weaken'd when the diſeaſe was incipient, but when it had already proceeded for ſome length of time.

19. Now take the ſecond obſervation, which, on the other hand, though it might ſeem to relate to external pains, yet, in fact, was found to relate to the internal parts, and therefore better deſerves not to be paſs'd over.

20. A monk of Padua, who was, at leaſt, ſeventy years of age, had begun, after a kind of fever attended with a coldneſs, to labour under pains, which he ſuppos'd to be from defluxions, as he call'd them. Theſe pains ſeem'd to lie in the muſcles, which were about the os innominatum on one ſide, and a little above anteriorly: and in thoſe that are extended through the femur on the ſame ſide, being ſometimes more, and ſometimes leſs troubleſome; ſo as not to prevent him from walking. When he had ſuffer'd theſe pains for two or three years, they at length grew more violent: and he died about the middle of July, in the year 1737; there appearing, the day before he died, in the groin of that ſide, a tumour wherein a matter was perceiv'd to fluctuate.

The abdomen being cut into in that part, in order to enquire from whence this matter had its origin; contrary to all expectation, a great quantity of pus was found betwixt the peritonæum and the os innominatum, which was there cover'd with thoſe muſcles that I ſhall mention preſently.

21. You will think that this obſervation deſerves ſo much the more to be attended to by phyſicians, as internal diſorders may the more eaſily impoſe upon us under the appearance of defluxions, and degenerate into abſceſſes of that kind: and in proportion as the ſame diſorders, perhaps, more frequently lie hid under a maſk of this kind.

(*l*) Adverſ. Anat. 2. Animad. 15. in fin.

At

At leaſt, this was ſeen three times by one ſurgeon; I mean, the celebrated Benevoli (*m*); who adds, that the ſame thing was likewiſe ſeen by Querci: and he very properly explains what kinds of tumours, lying near the muſcles which we call pſoæ, or iliaci interni, may not only be the cauſe of contractions that are troubleſome in the thighs; but, finally, may alſo, when ſuppurated, ſend down pus into the upper parts thereof. Theſe remarks, however, you will ſee more at large in the author himſelf. Farewel.

LETTER the FIFTY-EIGHTH

Treats of the Lues Venerea.

1. IN the letters that I have already ſent you, I have communicated many obſervations which relate to the lues venerea. There is, then, no reaſon why you ſhould be ſurpriz'd, if I ſay that there are ſcarcely any left to be copied here. But if you inſpect thoſe letters which I ſhall immediately refer to; you will ſee that this has been ſufficiently done, when, on the occaſion of other diſeaſes, which either aroſe from this, or were join'd with it, I did not omit making mention of this diſorder; or, if there ſeem'd to be any internal injuries from thence, that theſe were not omitted likewiſe.

2. For in the very firſt letter (*a*), when I ſpoke of ſevere pains in the head, I have told you what diſorder there was in the meninges, the cerebrum, and cerebellum: and what in the cerebrum and cranium, when, in the ninth letter (*b*), I wrote of the epilepſy. And in the forty-ſecond letter (*c*), and the forty-fourth (*d*), we meet with injuries either in the epiglottis alone, or in the other cartilages of the larynx alſo, and the aſpera arteria: and in the ſame letters (*e*) (*f*) internal diſeaſes of the great artery are ſpoken of; ſo that, ſuppoſing theſe circumſtances, it is leſs to be wonder'd at, that, in the eighteenth letter (*g*), this artery is dilated into an aneuriſm; or that, in the fortieth (*h*), twenty-ſeventh (*i*), and fifty-third (*k*), an aneuriſm, moreover, or the artery itſelf, could be ruptur'd.

In the eighteenth letter (*l*) you have the lungs on one ſide purulent; but particularly in the twenty-ſecond (*m*). And in the fourth (*n*), forty-ſecond (*o*),

(*m*) Due Relaz. Chir. Vid. I.
(*a*) N. 14. (*b*) N. 23. (*g*) N. 25. (*b*) N. 29.
(*c*) N. 39. 40. (*d*) N. 15. (*i*) N. 28. (*k*) N. 7
(*e*) N. 39. (*f*) N. 3. (*l*) N. 25. (*m*) N. 10. 11. 15.
(*n*) N. 19. (*o*) N. 2. 40.

forty-

forty-fourth (*p*), and forty-eighth (*q*), you have the kidnies purulent, or otherwiſe diſeas'd; and other parts of the urinary organs. Moreover, the forty-ſeventh letter (*r*) ſpeaks of an excreſcence in the uterus, and, at the ſame time, a cicatrix in the lower part of the vagina near to the urethra.

In the forty-fourth letter (*s*) you have an unuſual moiſture and redneſs of the male urethra; and in the ſame (*t*), and the forty-ſecond (*u*), you have the urethra narrow and contracted in ſome places: and theſe two laſt-mention'd letters (*x*) (*y*), the fourth (*z*), and the fortieth (*a*), ſpeak of excreſcences of the urethra, or the remains of excreſcences.

And; to omit the fifty-ſecond letter (*b*); the eighth (*c*), the twenty-ſeventh (*d*), the forty-ſecond (*e*), and the forty-fourth (*f*), ſhew theſe larger canaliculi to have been generally, or in part deſtroy'd: and, finally, this laſt letter either ſpeaks of other traces of diſorders in the urethra (*g*), or of the inflammation of the part ſurrounding Littre's gland (*h*); or of the induration of one of Cowper's glands (*i*), or its being contracted and ſtrigoſe (*k*); or of the orifices of both the ducts not being in a natural ſtate (*l*); or of the orifices of thoſe ducts, which bring in the ſemen, being ſtopp'd up (*m*) or, at length, of the veſiculæ ſeminales being contracted, and without moiſture (*n*).

3. Nor, indeed, have I ſent to you obſervations of theſe diſorders only that I have ſpoken of; but even in thoſe two letters particularly, that I often made mention of juſt now; I mean, the forty-ſecond and forty-fourth; I have purſu'd, pretty much at large, ſome ſymptoms that attend, or are ſubſequent to, the lues venerea: that is to ſay, the gonorrhæa, and the caruncles, as they are call'd, of the urethra.

For in that forty-ſecond letter (*o*), I have not omitted to ſay what others have thought or ſeen, and what it happen'd to me to ſee, in reſpect thereto. And in regard to the gonorrhæa, on the ſubject of which the whole forty-fourth letter turns; I have ſaid, in order, what has been ſeen by others, and by myſelf, in regard to its particular ſituations: and have not omitted ſome other things that related thereto.

As, therefore, I am determin'd not to repeat any thing which has been already ſaid, it now remains only to produce three or four obſervations in this place, which relate to the lues venerea; as I have no more than this number ſtill left behind. The two firſt of theſe are from Valſalva.

4. A woman, who had completed her fiftieth year, was attack'd with a pain in the lower jaw, attended ſometimes with ſo large a flux of blood, that it was intended to have reſtrain'd this diſcharge by the application of the actual cautery; if it had not ceas'd of itſelf. In a little time after, the woman began to be troubled with pains in her bones: with which having long

(*p*) N. 15. 27. (*q*) N. 32.
(*r*) N. 28. (*s*) N. 3. 5. 7.
(*t*) N. 10. (*u*) N. 39. 40.
(*x*) N. 7. 10. 18.
(*y*) N. 39. (*z*) N. 19.
(*a*) N. 29. (*b*) N. 30.
(*c*) N. 6. (*d*) N. 28.
(*e*) N. 39. 40.
(*f*) N. 7. 9. 12.
(*g*) N. 9. 14. (*h*) N. 15.
(*i*) N. 3. (*k*) N. 12.
(*l*) Ibid. (*m*) N. 7.
(*n*) Ibid.
(*o*) N. 38. & ſeqq.

been

been afflicted, ſhe began, as often as ever ſhe was mov'd, to complain that all her bones were broken; and, indeed, thoſe who ſtood by her heard a crackling in her joints at that time. To this ſymptom another was afterwards added, that the bones of the lower limbs began to be bent, as if they were made of wax; and to be in pain even on the ſlighteſt motion.

At length, in examining her body after death, the oſſa innominata, the oſſa femoris, and tibiæ, and thoſe bones that make up the arch of the cranium, were found to be flexible, juſt as if they were made up of pretty thick paper: on their ſurface they were ſpongy; and at the meditullium, in ſome places, carious.

5. From whence that great quantity of blood was diſcharg'd, of which mention is made in the beginning of this hiſtory, Valſalva has omitted to ſay. But I have heard, from thoſe who had ſeen the woman together with him, both when living and dead, that ſhe had an abſceſs on one ſide of her neck; ſo that I ſhall ſuppoſe it to have flow'd from thence. The ſame perſons alſo added, that ſome other bones likewiſe, among which were many of the ribs, and the bones of the feet, were flexible in the dead body; and admitted the knife like cartilages: and that all the bones, which yielded to the force that bent or compreſs'd them, diſcharg'd a certain fluid, ſimilar to diluted blood, during the action of bending or compreſſing.

I afterwards ſaw theſe bones likewiſe myſelf; for Valſalva had preſerv'd them: the oblong ones were curv'd into the form of an arch, and thoſe that compos'd the vault of the cranium depreſs'd into the figure of a plane; and all of them were of a very bad colour and ſmell, becauſe they could not be clean'd internally, giving an unctuoſity to the fingers in handling them.

But as they had now been preſerv'd for a long time; I could not learn ſome circumſtances which I ſhould have enquir'd into in their freſh ſtate, and even in the body itſelf: among which was this; in what ſtate the heads of theſe bones were in the joints; that is, whether they were more or leſs daub'd over with mucilage; I mean, on account of that crackling which was heard in the joints, by the aſſiſtants, when the patient mov'd them: but ſtill much more ſhould I have wiſh'd to know in what ſtate the genital parts were, in a woman who, they ſaid, had been ſo infected with the lues venerea, that they did not doubt but this very great diſeaſe of the bones had taken its origin from that diſorder.

6. We ſhould have the moſt ancient examples of the human bones being become ſoft, if what Sachſius (*p*) ſeems to think, with Peter a Caſtro, that this diſorder is call'd "by the Arabians *Alachad*, and *Alzemena*, and was cur'd "by Avicenna," were certain; as it is certain, from the Latin increas'd interpretation of Arabic words of Andreas Bellunenſis (*q*), which is publiſh'd with Avicenna, "that there is an *alzemena*, or *zemena*, when the patient, by "reaſon of the ſoftneſs, or paralyſis, of the feet or hands, is prevented from "moving thoſe limbs: ſo that this title of the obſervation of Peter a Caſtro, *De Membrorum & Oſſium Mollificatione*, ſeems to refer to the reſolution or pa-

(*p*) In Schol. ad Obſ. 37. A. 1. Dec. 1. Eph. N. C. (*q*) Ad vocem *Alachad*.

ralyſis of the limbs, or, as the interpreters of Avicenna ſay, to the *mollification* (*r*) thereof; and not to the ſoftneſs of the bones.

Yet there are examples ſufficiently ancient, which Fernelius (*s*), and Ruellius, whom he quotes, have deliver'd down in writing; adding, that the diſeaſe had been happily cur'd by means of aluminous baths: which method you will underſtand, from Sachſius (*t*), that others alſo had follow'd.

But as I could not learn from thoſe caſes what was the ſtructure or nature of theſe bones thus ſoften'd, as they appear'd from diſſection, by reaſon of firmneſs being reſtor'd; ſo neither have I learn'd this circumſtance, in the manner I hop'd I ſhould, from other caſes that are generally enumerated; as, for inſtance, from thoſe that are mention'd by Jacobus Hollerius (*u*), by Gulielmus Fabricius Hildanus (*x*), by Peter Borellus (*y*), by Thomas Bartholin (*z*), and by Daniel Prottenius (*a*).

And, indeed, I even omit thoſe which relate rather to a peculiar degeneracy of any one bone, than to that which is at the ſame time common to moſt of them; and among theſe I place that which is related from Bartholin, whom I have already mention'd, in the Ephemerides of the Cæſarean Academy (*b*).

Coming down, therefore, to thoſe authors who have flouriſh'd in our memory, I firſt found Gabrieli (*c*), among the Italians, who, not later than the eighty-eighth year of the preceding century (for Gagliardi (*d*), mentioning the ſame obſervation briefly in the following year, has ſaid that it was "very "lately communicated" to him); who, I ſay, about that year, then, in diſſecting the bones of a matron; none of which had retain'd their former hardneſs, and whoſe more oblong bones had almoſt all of them become flexible to every ſide; found the latter converted, not into a fibrous fleſh indeed, but into a reddiſh fleſh.

After this I read an almoſt ſimilar obſervation of Courtialis (*e*) on another woman: and even not only all her bones, the teeth excepted; of which Gabrieli has made no mention; could be bent, but all of them reſembled fungous and ſoft fleſh, impregnated with a bloody ſerum.

And although I do not ſee, that ſome obſervations of the celebrated ſurgeon Petit (*f*) are of a different kind, as they ſpeak of the bones being chang'd into a ſubſtance ſimilar to fleſh, without the neighbouring or interpos'd cartilages being injur'd, as far as he could obſerve; and although they have brought back to my memory, that thoſe thick cartilaginous ligaments, which are interpos'd to the bodies of the vertebræ, were found to be quite uninjur'd where the vertebræ were deeply diſeas'd by a caries (*g*); yet, as

(*r*) Vid. c. 2. Fen. 2. l. 3. Can. Avicen.
(*s*) De abdit. rer. Cauſ. l. 2. c. 9.
(*t*) Schol. cit.
(*u*) In adjectis, l. 1. de Morb. Int. Raris quibuſd. n. 7.
(*x*) Cent. 1. Obſ. Chir. 45. & Cent. 6. Obſ. 74.
(*y*) In fine Epilog. additi ad Cent. 4. Hiſt. & Obſ. Med. Phyſ.
(*z*) Cent. 6. Hiſt. Anat. 40.
(*a*) In Act. Med. Hafn. Vol. 3. Obſ. 24.
(*b*) Obſ. 37. ſupra cit.
(*c*) Eph. N. C. Dec. 3. A. 2. Obſ. 3.
(*d*) Anat. Oſſ. c. 2. Obſ. 3.
(*e*) Hiſt. de l'Acad. R. des Sc. A. 1700. Obſ. 2.
(*f*) Mem. de la même Acad. A. 1722.
(*g*) Epiſt. 40. n. 26. & 29.

theſe

theſe obſervations of Petit never ſpeak of that diſeaſe as occupying many parts at the ſame time, and always as being join'd with a tumour, they cannot be referr'd by me to the ſpecies whereof we are ſpeaking.

And the ſame muſt be ſaid of many others; as, for inſtance, of that which is from Mauchart (*h*), of the upper parts of the thigh-bone being grown large, and ſo ſoft as to yield to the handle of the knife, and even to the fingers; and, when preſs'd, to emit a kind of bloody medulla, ſimilar to that which is in the ſmall cells of the bones: or of that obſervation which is twice publiſh'd from Nebelius (*i*), of a diſorder which conſiſted in the much greater part of the ſame bone being converted into a large, whitiſh, and ſpongy maſs; except that a great number of ſmall lamellæ remain'd divided within it, and the medullary ſyſtem was ſemi-lacerated and become empty: the whole being ſurrounded by a white, hardiſh, and even almoſt cartilaginous membrane, which was ſuppos'd to be the perioſteum.

A membrane of this kind, you will alſo find, was met with by Alexander Camerarius (*k*), ſurrounding tumours, under which, in a ricketty boy, certain parts of the oſſa humeri and femoris were ſo conſumed and waſted away, as to have degenerated into a fluid matter; not at all fœtid, of a white colour, and almoſt like coagulated milk: which diſorder he therefore call'd "the white caries of the bones."

If you have the diſſertation of Platner which is intitled, *De Thoracibus*; you will be able to ſee, whether, and how far, thoſe words of that diſſertation which I have read in the *Acta Eruditorum* (*l*) relate to this ſubject: "That the bones, in thoſe who are pretty far advanc'd in life, are ſometimes "ſo preternaturally ſoften'd, and become waxy and fragile, as to be fluid "as if melted down; and this was found, by his own experience, in the "right os innominatum of a certain man."

Finally; to return from fluid bones to thoſe that are eaſily to be cut with the knife; there is extant an obſervation of the illuſtrious Haller (*m*) upon the fibula; which, without any change in the perioſteum, being become quite fleſhy, or ſimilar to ſoft cartilage, was made diviſible by a knife, in the ſame manner as pretty hard cheeſe: being tumid, and internally eroded by a fœtid ulcer.

All theſe obſervations; though, for one or other of the reaſons mention'd above, or for both of them, they do not relate to the ſubject in queſtion any more than the obſervations of Petit; I, nevertheleſs, was not willing to paſs over: as I do not doubt but you may ſometimes transfer theſe appearances, that are found in particular parts, to thoſe which will occur in many at the ſame time, or in almoſt all, in order to explain them thereby.

But now, to refer the obſervations of Gabrieli and Courtialis, taken notice of above, to that ſpecies of diſorder which we have undertaken to conſider here; as the obſervations are very ſimilar to that given above from Valſalva in this reſpect alſo, that pains of the whole body had preceded this ſtate of

(*h*) Eph. N. C. Cent. 9. Obſ. 30.
(*i*) Act. N. C. Tom. 1. Obſ. 15. & Tom. 5. Obſ. 111.
(*k*) Tom. cod. 1. Obſ. 53.
(*l*) A. 1751. M. Sept. P. 2. ex ejus Diſſertationum, pag. 139.
(*m*) Opuſ. Pathol. Obſ. 54.

ſoftneſs in the bones; it is certainly ſurprizing, that, after ſo great a ſimilitude of diſeaſe while thoſe three women liv'd, ſo great a diſſimilitude ſhould be found in the bones after death: ſo that, although in two of them they reſembled fleſh, in one they were become ſpongy and carious, yet, nevertheleſs, ſtill remain'd in the form of bones.

But a much greater diſſimilitude (unleſs you ſhould chuſe rather to account for this, and others ſimilar thereto, from the exceſſive progreſs of the diſorder) occurs in that inſtance which is made mention of by Boerhaave (*n*). For a man, who had liv'd with his bones in a ſtate of ſoftneſs, and not without the moſt ſevere pains, had his bones, after death, "ſimilar to a pultaceous "ſubſtance, and ſuch as is prepar'd from bones in Papin's digeſter."

And this being the ſtate of the queſtion, you naturally ſee that, if at any time diſorders of this kind recur, the phyſician muſt be very cautious in predicting what will be the ſtate of the bones; as the ſtate was found to be ſo very different in the four bodies after being affected by theſe diſorders.

7. And of theſe three, the ſpecies of diſorder which was found by Valſalva cannot be referr'd to that conſtitution which phyſicians have ſometimes obſerv'd, but particularly from the lues venerea; I mean, a caries which has proceeded ſo far, that the bones may be eaſily broken in the dead body, or by any motion whatever of the body while living: more than one example of which kind, (not to digreſs too far in pointing out what Blawius (*o*) and others have publiſh'd) you have, in this ninth ſection of the Sepulchretum (*p*), and in the fifth (*q*) of this very fourth book.

For in the woman of Valſalva's in queſtion, the bones indeed were ſpongy on their ſurface, and carious; but in other places at the meditullium, and in the whole part which lay betwixt the meditullium and the ſurface, they were without a caries. They were not broken, therefore, but bent; and by that means ſhew'd that the fibres were not in great meaſure eroded and deſtroy'd, but ſoften'd.

Yet from whence this ſoftening? For if they had been made fleſhy, or pultaceous; you would have the moſt ingenious men to follow in their conjectures, that into the place of the bony particles, which are ſuppos'd to be rubb'd off, and carried away, from the bones; even in healthy perſons; new particles of the ſame kind are not ſupplied, as they ought to have been: but particles of a totally different nature, which can never coaleſce into the hardneſs of a bone.

If, therefore, it is your pleaſure alſo to indulge yourſelf in conjectures; you muſt here endeavour to think of a humour, which, when carried into the bones, could ſoften them. For without the body; that is, when the bones are much more rigid; Ruyſch (*r*) has ſhewn the poſſibility of doing this, when he has ſaid that, by means of a liquor wherein he had preſerv'd the ribs, and which was made pretty acid, theſe bones were ſoften'd to ſuch a degree, that they could be diſtorted into a ſpiral figure; juſt as we would a

(*n*) Prælect. ad Inſtit. § 401.
(*o*) Eph. N. C. Dec. 3. A. 7. & 8. Obſ. 151.
(*p*) Obſ. 1. § 13, 14.
(*q*) Obſ. 1. § 2. & Schol. ad § 10.
(*r*) Theſ. Anat. 6. n. 13.

cord:

cord: and this he afterwards confirm'd by macerating others in an acid liquor; for he could reduce them (*s*) into the form of the letters C. and P.

And in the ſecond of his Adverſaria (*t*) he has aſſerted, not only that the ribs become ſoft and flexible, from a ſimilar maceration; but alſo that the human bones in general were thus changeable: and, indeed, he has expreſsly added the following words: "Does it from hence appear in what manner "that memorable diſeaſe was brought about, wherewith a virgin, in France, "being affected, had all her bones ſoften'd down like paſte?"

But as in thoſe former experiments he has only mention'd the ribs of *infants*, and here, with the ſame view, the bones of *children*; you may add to theſe the bones ſhewn by Hunauld to the Royal Academy of Sciences at Paris (*u*), which, being macerated in vinegar, were become ſoft by that means: and becauſe it does not appear from what bodies theſe bones had been taken, you may join with them the inſtances which were related to the ſame Academy, by the two celebrated men Fauchy and Geoffroy (*x*), of two ivory ſpoons; one of which having been left in milk for a long time, through forgetfulneſs, and conſequently in milk that was become acid, was found to be flexible like leather: the other, which was ſmall, and ſeen by the Academy itſelf, had been made flexible, like horn, and pellucid; after having remain'd a long time in that kind of ſauce which we call muſtard.

But, to return to vinegar, I would alſo have you attend to this; that when thoſe bones which Hunauld ſhew'd to the Academy, had been ſoften'd by vinegar, they recover'd their former hardneſs by being macerated in water; and, again, loſt that hardneſs in vinegar: and from all theſe circumſtances, and from that I have taken notice of above (*y*), of aluminous baths, which have reſtor'd loſt firmneſs to the bones of living men; you may take a new argument of the various and manifold cauſes, and alſo of the various and manifold diſorders, whereby the bones may be made flexible: for, certainly, if they had been fleſhy, or pultaceous, there could have been no room for any remedy whatever.

And if it were determin'd univerſally, that the bones in ricketty children were of a waxy flexibility, and Mayow, as you even have it in the Sepulchretum (*z*), did not contend that they are "rather more firm than in "others;" I ſhould have taken notice of ſome external remedies here, which are ſaid to have been uſeful to ſuch patients, and have compar'd them with the experiment of Hunauld.

But as, in order to explain the curvatures of the bones which are in thoſe children, it does not ſeem abſolutely neceſſary to ſuppoſe that waxy ſoftneſs of the bones; ſince it is quite ſufficient that they are much leſs hard than in adults, as that age requires; ſo that, by the prevailing force of the muſcles, which belong to one ſurface of the bones, they may be bent to that ſide, as has been ſhewn on another occaſion (*a*), where I have alſo ſpoken of the ſkeleton of a young girl propos'd and explain'd by Mery (*b*): I, therefore, did

(*s*) Theſ. Max. n. 164. & Theſ. Nov. n. 129.
(*t*) C. 6.
(*u*) Hiſt. A. 1742. Obſ. de Phyſ. & c. 7.
(*x*) Ibid. & Hiſt. A. 1743. Obſ. de Phyſ. & c. 13.
(*y*) N. 6.
(*z*) L. 2. S. 12. in fin.
(*a*) Epiſt. 27. n. 33, 34.
(*b*) Mem. de l'Acad. R. des Sc. A. 1706.

not think that the bones of this young woman, which were ſo curv'd in the limbs, and the low ſtature in conſequence thereof, had any reference to this ſubject; notwithſtanding ſimilar circumſtances to theſe have happen'd in thoſe perſons whoſe bones I have ſaid were made fleſhy or pultaceous; nor yet that the ſhortneſs of dwarfs, by reaſon of their bones being diſtorted from the rickets, have any relation to the point in queſtion: although I know that not all who are dwarfs are ricketty.

For if you can poſſibly doubt, whether any perſons are born with a very ſhort body, and grow very little, and yet have their bones ſtrait, and all their limbs correſponding to each other in proportion; you may be convinc'd even by that laſt example, which you will read in the hiſtory of the Academy that I have commended (*c*), of a boy who was now five years of age, and yet not longer than two-and-twenty inches.

But now; before we paſs on to other things; I chooſe to add, to thoſe cauſes which we have ſpoken of above, of flexibility, and of fragility, in the bones, the following things alſo. Dominic Gagliardi (*d*) has ſuppos'd that the bones are made ſoft, and conſequently fragile, in thoſe bodies, wherein they have happen'd to be naturally leſs hard than in others: and that they are not of the ſame hardneſs in all perſons, but more or leſs hard in different perſons, according to the various degree of the coagmentation, and conſolidation of the bony juice; which perhaps might be confirm'd from thence, that they much more frequently become ſoft in women, than in men: and that this bony *gypſum*, as he call'd it, is ſoften'd, in conſequence of its being *alcaline*, by the acids which are thrown into the veſſels of the bones; and that from hence it is that perſons ſubject to "rheumatic and arthritic pains, "but particularly to pains from the lues venerea," are alſo ſubject to have their bones become ſoft.

And by theſe means he, in ſome meaſure, led the way to the experiments of thoſe perſons, who, as I ſaid juſt now, affirm'd afterwards, that the bones are ſoften'd by means of acid liquors. And that it has more than once happen'd to rheumatic and arthritic patients, to have their bones become flexible, we learn from ſeveral obſervations; to which you will alſo add that of the celebrated Targioni (*e*), on a woman, in whom the vehemence of arthritic pains had diſtorted the oſſa humerorum, the ulnæ, and radii, into the form of an arch.

But as to the humours being infected with acid particles, in the diſorders which Gagliardi has made mention of; as this cannot be prov'd by every one; you will only admit of the argument from him as far as you think proper, and leave the reſt undetermin'd.

Moreover, in regard to the fragility of the bones, the celebrated Loviſius (*f*) ſhows, that this is not always brought on by a caries. For when he diſſected the body of a woman, who had broken the os humeri, and ſoon after the os femoris alſo, by a ſlight effort, he found the bones "not carious, "but dry, and fragile; and the medulla, in like manner, dry, friable, and

(*c*) A. 1746. Obſ. Anat. 8.
(*d*) Obſ. 3. ſupra ad n. 6. cit.
(*e*) Prima Raccolta d' Oſſervaz. Med. nella Deſcriz. d' un Tumore Follicul.
(*f*) Vid. Act. Erud. A. 1751. M. Jun. P. 1. ubi de ejus Obſervationib.

"quite

" quite looſe from the parietes of the bony cavities." And this woman was actually ſixty years of age; but of a pretty fat habit of body: full of health beſides, and alacrity; except that ſhe had already labour'd, for ſome time, under a cancer of the breaſts.

But now take the other hiſtory of Valſalva's that I have promis'd you.

8. A man, who was a native of Bologna, had been afflicted with pains, in conſequence of the lues venerea, which return'd every day at a certain period. Theſe pains were very violent at the diaphyſis of the tibiæ, and at the ankle-bone at the ſame time; where a ſmall, and ſomewhat ſoft, tumour was perceiv'd by the fingers, and by the eyes. Internal and external remedies being made uſe of in vain, Valſalva applied the ſcalpel, and gave the wiſh'd-for relief.

For having open'd, and laid aſide, the common integuments; and taken away a ſmall quantity of yellow jelly, which was interpos'd betwixt thoſe integuments and the ſubjected tendons, and made up the tumour; the pain in the ancle did not return on the following day.

However, as the patient ſaid that he was prick'd with needles as it were, if the neighbouring tendons were by any means preſs'd upon; it was eaſily conceiv'd that ſome part of that jelly lay hid beneath them: which, at length, being wholly, and dextrouſly, taken away quite from the very bone, without injuring the tendons, that ſenſe of the pricking of needles vaniſh'd alſo.

But the pain in the tibia remain'd, contrary to expectation; for it was ſuppos'd to be produc'd by conſent of parts. The perioſteum, therefore, was laid bare by the knife; and was found to be not quite in a natural ſtate: ſo that it was neceſſary to procure a ſeparation thereof from the bone, which was in other reſpects ſound. This being done, no pain any longer remain'd: and the wounds being eaſily brought to a cicatrix, the patient was diſmiſs'd in good health.

9. When Valſalva related this obſervation to me; for he did not leave it in writing; I remember him to have added, that other ſimilar tumours, from a venereal cauſe, had alſo been cur'd by him in the ſame manner; ſo that neither they nor the pains return'd afterwards. And he claſs'd them among the venereal gummata, as they are call'd; thinking it by no means neceſſary, that they ſhould all ariſe under the perioſteum, or be comprehended in a peculiar coat.

Nothing is more ſimilar to the obſervation in queſtion, than that of Fabricius ab Aquapendente (*g*); which has been already taken notice of by me alſo; except that the tumour was not at the ankle, but at the wriſt, and brought on ſevere pains every day, at a certain hour: being made up, as he found by diſſecting out the tumour, of a ſmall quantity of vitreous pituita, according to the manner of ſpeaking made uſe of at that time, lying in contact with the internal tendons.

And I ſuppoſe that Nicolaus Maſſa referr'd to a matter of this kind, when, in the carcaſes of thoſe perſons who had been afflicted, while living, with the venereal diſeaſe; and he had diſſected a great number; he aſſerted, as you have it in the Sepulchretum (*b*), that he had found " the painful places to

(*g*) De Chirurg. Oper. ubi de Articulor. Uſt. (*b*) Sect. hac IX. Obſ. 1. § 1.

" be

" be moiſt with a pituitous matter :" and this Fracaſtorius (*i*) alſo ; where he aſſerted his having found out the cauſe of the pains which afflict venereal patients by night, from the ſame lues," by making a number " of diſſec- " tions ;" ſpoke of under the title " of a kind of lentor," which he had ſeen upon the tendons and muſcles : and he has expreſsly aſſerted, " that " gummoſities are made up of concreted phlegm."

Nor is it of any importance that Fabricius has not ſaid whether the tumour which he cut out was venereal ; for he acknowledged gummata(*k*) to be frequently, but not always, from that cauſe.

However, I would rather you ſhould of yourſelf doubt, whether two anatomiſts, and at the ſame time very excellent ſurgeons, Fabricius and Valſalva, were not themſelves alſo at thoſe times deceiv'd, when both of them ſuppos'd that the tendons, and the latter of them even that the perioſteum, were affected with theſe pains ; I ſay, I had rather you would of yourſelf doubt, than that I ſhould give out the ſuſpicion.

But that gummata are not always ſeated betwixt the perioſteum and the bone ; although you ſhould not digreſs from this ſection of the Sepulchretum ; you will naturally conceive : and not only from Rhodius (*l*), who, in this very theatre of ours, ſaw " three white gummata" demonſtrated by Anthony Molinetti, upon opening the cranium, " and theſe gummata adhering " to the dura mater ;" but alſo from Guarinoni (*m*), who aſſerts, that he " had ſeen the gummata ſpoken of concreted in the brain."

This ſituation I mention in particular, becauſe theſe things are added to this author's obſervation, wherein " three little bodies, like venereal gum- " mata," are ſaid to have been ſeen in the brain of a man ; who having been ſubject to epilepſy, and convulſion, after the lues whereof we are ſpeaking, was, at length, carried off by a very heavy ſleep.

And as this cauſe, and theſe diſorders, are likewiſe read of in a hiſtory which I have written to you ſome time ago (*n*) ; you may compare them one with another, and conſider again, if you pleaſe, of what I then left undetermin'd (*o*), in regard to that ſmall and roundiſh abſceſs within the cerebrum ; I mean, whether it belong'd to the claſs of gummata, or not.

And while you are doing this, you will, at the ſame time, call to mind thoſe gummata of the head, which generally begin under the integuments of the cranium, and erode the bone, unleſs they are attended to in time ; as the ſame hiſtory ſhows ; ſince obſervations of this kind are here wanting in the Sepulchretum : with which otherwiſe it might have been encreas'd ; and amongſt theſe with that which the celebrated Heiſter (*p*) has produc'd, together with the diſſection of the body after death.

10. For the two remaining obſervations of Valſalva, which I have given, I will ſubjoin as many of my own that remain behind ; beginning with that which is particularly requir'd by the diſcourſe I have begun, upon a caries corroding the cranium. For that this ſpreads far and wide, unleſs you pre-

(*i*) De Morb. Contag. l. 2. c. 12.
(*k*) l. cit. ubi de Gummatib.
(*l*) Obſ. 1. §. 9.
(*m*) in Schol. ult. ad Additam.
(*n*) Epiſt. 9. n. 23.
(*o*) n. 24.
(*p*) Diſſert. de Oſſ. Tumorib. n. 15.

vent

vent it in time, I have even ſeen without the diſſection of the body, and you will conceive.

11. An old woman, in the hoſpital of Incurables at Bologna, had ſo much of the left os ſincipitis, and the neighbouring os frontis, conſum'd by a venereal caries, that the brain was laid open by a foramen of three fingers breadth in every direction; and you could plainly ſee, while you felt the artery at the wriſt, that this artery and the brain rais'd themſelves up, and ſubſided, at the ſame point of time.

And leſt you ſhould doubt of this, I ſaw her frequently in that year, which I think was 1700; for the woman did not live there a little time; although the eroding virus was not yet entirely overcome, nor the ulceration, which was external about the edges of the foramen, was drawing on to a cicatrization. But the membrane of the cerebrum itſelf appear'd to be clean and bright in its colour.

12. It does not eſcape me that the cranium is conſum'd for a much wider ſpace, if the caries goes on, as; to omit others; I have read our Falloppius (*q*) ſaying, "that the whole ſinciput is ſometimes corrupted; and "ſometimes alſo a part of the occiput: and at other times that the whole "ſkull is corrupted, and taken away; and this," ſays he, "I have ſeen "firſt in my mother's ſiſter, who had receiv'd the lues venerea from her "huſband: and I took away from her the whole cranium: the membrane "is cover'd with a kind of pellicle; and the pulſatile motion of the dura "mater is always perceiv'd." And he adds, that "he had many other ex-"amples of the ſame kind, both here, and in other places."

But in that old woman, there was not a manifeſt pellicle which cover'd the meninges: and the part even appear'd as if the dura mater had been taken off, and we were looking upon the brain when cover'd only with the pia mater, having a reddiſh, ſmooth, and moiſt ſurface. I could not, therefore, ſufficiently admire, how the humour, which had been able to erode the bone, had not injur'd, in the leaſt, that membrane; and how it was that the woman labour'd neither under convulſion, paralyſis, nor any other mark of injury in the brain, or its membranes: although whether ſhe had labour'd under theſe ſymptoms before, or not, I cannot inform you.

Nor was Hildanus leſs ſurpriz'd formerly (*r*), that no ſymptoms of injury done to the ſpinal marrow, were preſent in a man who had it "laid quite "bare, and cover'd over only with its membrane;" whereas three of the bodies of the thoracic vertebræ were deſtroy'd by the caries.

And, indeed, theſe things are more ſurprizing than that the muſcles, which lie upon the bones, or the integuments, ſhould, ſometimes, not be injur'd by the humour which erodes the ſubjected bones both internally and externally, without any external tumour, or diſcolouration betraying the diſorder: which circumſtance miſerably deceives incautious lovers, who are ignorant that under a fair appearance of body, though not disfigur'd in the ſlighteſt degree in any part, even the moſt conſiderable caries may lie hid; an example of which kind is particularly to be read in Noveſius (*s*), from

(*q*) Tract. de Ulcer. c. 47. (*s*) Letter 6.
(*r*) Cent. 5. Obſ. Chir. 56.

whom it might be referr'd into the Sepulchretum, with the approbation even of Guilielmini (*t*).

When Benivenius (*u*) formerly propos'd an inſtance of the os frontis being almoſt wholly conſum'd (but by a caries of another kind, as it is natural to ſuppoſe), without any mark being conſpicuous externally; he made uſe of the example of thunder, which ſometimes melts gold without injuring the caſe wherein it is kept; or does other things of the ſame kind, which Marcellus Donatus (*x*) adds, when he relates the obſervation of Benivenius.

But others chooſe rather to make uſe of the example of aqua ſtygia, which deſtroys iron, for inſtance, but does not touch ſuet. You may either deviſe ſome other compariſon, or follow theſe authors. For it will not only be of uſe in the caſes in queſtion, but in others alſo.

So our Fabricius (*y*), in a boy; Matthæus Blawius (*z*), in a man; ſo Jo. Jacob Scheuchzerus (*a*), in a woman; ſaw the ſkull entirely perforated, in more places than one, by a corroding caries; and yet the dura mater unhurt: ſo as to make it evident, that the acrid and corroſive humour, to uſe the words of Fabricius, was "contrary to the nature of the bones of the "head, but by no means to that of the ſubjected membrane."

But leſt you ſhould ſuppoſe this to happen in every caries of the cranium, you may learn the contrary from many obſervations; and among others from two of Laubius, one on a woman (*b*), the other on a man (*c*); in both of whom the cranium was ſo conſum'd, by a caries, to a conſiderable extent, or perforated thereby, that the correſponding parts, not only of the meninges, but of the cerebrum itſelf, gave acceſs for the pus, quite to the lateral ventricle, and the right ventricle in both: although in the woman, there at length came on a paralyſis of the ſubjected ſide; which had already exiſted for a long time in the man: and, as it is then wont, for the moſt part, to be, on the left ſide.

And as I have ſpoken ſufficiently of this difference already, on other occaſions; you yourſelf will conſider of the other, which relates to the preſent ſubject: that is to ſay, why the eroding ichor of a caries ſhould vitiate the meninges of ſome perſons, and leave thoſe of others unhurt? Is it becauſe, in the laſt-mention'd caſes, it has a free diſcharge outwards; and in the former has not? Or, becauſe in the latter it is infected with a venereal virulency; and is not in the former?

But as caſes are not wanting to be repugnant to either one or the other of theſe explanations; as to the firſt, that which has been propos'd by Blawius, in a man; as to the ſecond, that which has been propos'd by me, in a woman; you are certainly under a neceſſity, at other times, of accounting for it from ſome certain nature and diſpoſition of the ichor, and the bodies affected therewith. But I go on to my other obſervation, ſuch as it is.

13. A butcher, of forty years of age, who was infected with a venereal lues, and frequently intoxicated with wine, had been, for a long time,

(*t*) Reponſe 6.
(*u*) De abdit. &c. Morbor. cauſis c. 18.
(*x*) Medic. Hiſt. Mirab. l. 5. c. 1.
(*y*) De Chirurg. Oper. ubi de Gummatib. in fin.
(*z*) Eph. N. C. Dec. 3. A. 7. Obſ. 151.
(*a*) Act. N. C. Tom. 7. Obſ. 47.
(*b*) Eph. cit. Cent. 8. Obſ. 21.
(*c*) Earund. Cent. 9. Obſ. 14.

ſubject to diſorders of the thorax, and had been in this hoſpital, on that account, at other times. Laſt of all, returning into the ſame hoſpital, beſides an acute fever, on account of which blood had been twice taken away, (which neither the firſt nor the ſecond time was without a polypous cruſt) he was afflicted with a continual cough, which attack'd him ſo violently three or four times every hour, that he became livid therefrom: he expectorated purulent matter: and had a vibrating pulſe.

Having been thus affected about fifteen days; laſt of all, his ſtrength decreaſing more and more, within one day, he ceas'd to live about the end of January, in the year 1747.

The body; if you except ſome parts of the thorax; I had not in my power to examine at that time, being taken up with other things relative to the public demonſtrations of anatomy, The lungs were half-rotten, and ſmelt very ſtrong. The heart was lax. In one of the valves of the great artery, the corpuſculum Arantii was much larger than it naturally is. And under it, on that ſurface where the valve was turn'd towards its fellows, the membranous laminæ, of which it was compos'd, were ſo disjoin'd to a conſiderable tract, that where they open'd I could introduce a probe betwixt both. And the neighbouring trunk of the artery was diſtinguiſh'd, here and there, internally, with whitiſh ſpots: nor was it very ſmooth, but even ſomewhat unequal. And, ſoon after, being diſtended into an aneuriſm of the curvature; I was, for this reaſon, leſs ſurpriz'd, as I have ſaid heretofore (*d*), at what I obſerv'd in that valve.

14. Although, for the reaſon juſt now mention'd, I could not ſufficiently compleat this obſervation; yet I was willing, however, not to paſs it by, that you may join it with the others referr'd to in the beginning of this letter (*e*); whereby we have ſhewn, that the lungs are frequently injur'd in a lues venerea; and that the great artery is ſometimes injur'd from the ſame cauſe, and dilated into an aneuriſm.

Perhaps, we ſhould alſo have found the kidnies to be diſeas'd in that man. For theſe four parts, the lungs, the aorta, and the kidnies, together with their appendages, we have found to be injur'd; in thoſe who have labour'd conſiderably, and for a long time, under this lues; ſomewhat more frequently than you will eaſily imagine from the reading of moſt books.

But as to that viſcus, which very learned men had formerly ſaid was affected more than others, and indeed was the ſeat of this lues, as you ſee from the Sepulchretum (*f*); to which, however, others do not aſſent, as you will learn from the ſame book (*g*); I mean the liver; I do not, at preſent, remember that it ever appear'd to me to be vitiated in theſe bodies.

Yet I ſhall not for this reaſon deny, that thoſe things which happen rarely, or never, to me, might not have happen'd frequently to others; or, on the contrary, that thoſe things which happen frequently to me, might not have happen'd rarely to others: for I mean nothing elſe here but to inform you what I have happen'd to meet with the moſt frequently; as I very well

(*d*) Epiſt. 27, n. 7.
(*e*) N. 2.
(*f*) Obſ. 2. § 1, 2, 3.
(*g*) Ibid. § 4, 5. & Obſ. 4.

know, that this lues, ſince it may ſometimes lie hid under the maſk of any diſeaſe whatever, may alſo vitiate any viſcus whatever.

But what viſcera it really affects more frequently, or what leſs frequently, you cannot eaſily determine, before many obſervations of different perſons are compar'd together. Yet I cannot help being ſurpriz'd, that, as ſo many are infected with this diſeaſe, and ſo many die, the diſſections by no means correſpond to their number. And, certainly, you will not ſee a great number transferr'd into this ſection of the Sepulchretum.

The ſection, therefore, is ſhort; and ſo much the ſhorter ſtill, becauſe the whole of it is not of the lues venerea, but alſo of the *plica polonica*: and where it is upon that ſubject, it conſiſts in great part of ſcholia, one of which is not even found in its proper place; as, for inſtance, that which is affix'd in the third place to the firſt article of the firſt obſervation, wherein there is nothing of "tumid and ſuppurated bones;" whereas it belongs, as far as I can judge, to the eleventh article, which is three pages diſtant from thence: and almoſt all the ſcholia are from Sylvius; who endeavours to build up his theory of the acid nature of this poiſon; out of which ſome things might have been omitted, and others have been ſubſtituted in their places: as, for inſtance, when he has conjectur'd (*h*), that bubos ariſe in the inguinal glands, becauſe "they are near to the ſpermatic veſſels."

They judg'd better, who ſaid formerly with Braſavolus (*i*), "that a kind "of deprav'd quality aſcended, by the penis, to the emunctories, and to the "glandular parts of the groins; and excited bubos there." For although they did not point out the way which led into theſe glands; they did not, however, propoſe a paſſage which did not lead thereto.

What paſſages can lead to theſe glands, finally, William Cowper ſhew'd ſix years before the Sepulchretum came out with its Additamenta; among which this ought to have been put, as you have read in our Adverſaria (*k*), where we have transferr'd the ſame conjecture to women alſo: and have made uſe thereof, ſince that time, in conſultations where the queſtion was of bubos, that had ſucceeded to eroſions of the glans and præputium, degenerating into deep cancerous ulcers; as I have more than once ſeen.

Yet remarks are not wanting in theſe ſcholia that ſeem to be owing to diſſections; as that (*l*) of the venereal infection ariſing from the loculi of women, "quite to the cornua uteri, corrupting them, and exciting ulcers there:" which exceedingly well agrees with the obſervation of our Valliſneri (*m*) on a woman, in whom, in conſequence of the ſame lues, not only all the loculi, but the whole right tube alſo, was ulcerated.

By thoſe appearances that have been ſeen by Valliſneri in the viſcera of women, and by Genſelius (*n*), by Salzmann (*o*), by Caſpartus (*p*), by Petſchius (*q*), and by others, in the viſcera of men alſo, and in other parts of thoſe perſons who had died after this diſeaſe, you may increaſe the number

(*b*) Schol. ult. ad § 4. Obſ. 1.
(*i*) L. de Morbo Gall. ubi de Cauſ.
(*k*) IV. Animad. 22. & 27.
(*l*) Ad § 4. cit. Schol. 1.
(*m*) Iſt. della Generaz. P. 2. c. 5. n. 21.
(*n*) Eph. N. C. Cent. 6. Obſ. 84.
(*o*) Act. N. C. Tom. 2. Obſ. 99.
(*p*) Differt. de Exoſt. cran. § 8. ubi num Aortæ aneuriſma.
(*q*) Syllog. Anat. Obſ. § 87.

(which,

(which, as I have already ſaid, is not very large) of obſervations that are contain'd in this ſection of the Sepulchretum.

15. Nor does it eſcape me, that a book has been publiſh'd, in our age, "on the diſeaſes of the pudenda, and the lues venerea;" wherein you have many obſervations, relative thereto, made even upon dead bodies. But whether theſe might, as well as thoſe juſt now ſpoken of, be referr'd into the Sepulchretum, I do not very well know. Yet I do not ſay this becauſe I doubt the author's veracity, but becauſe I do not know how far his eyes, and his diligence, are to be depended upon.

For there are ſome things that he has affirm'd he had ſeen in other writings, which others believe he had ſeem'd to himſelf to ſee, though they themſelves could never ſee them. And things of this kind are not wanting in his book; as, for inſtance, when he ſays that the *uterus* is *interpos'd* betwixt the inteſtinum rectum and the lacunæ of the vagina: that the peritonæum *riſes up and is ſuperextended* upon the inguinal glands on the external part, that is betwixt them and the ſkin: that the lymph *is carried by the lymphatics of the meſentery to the glands of Peyerus, that is, to the inteſtinal glands:* that the pancreas Aſellii is in the human meſentery alſo; for he ſays that, in thoſe who have died of a lues venerea, *the pancreas of Aſellius is reduc'd to nothing:* and other things of a ſimilar kind, which I purpoſely paſs over.

And at the ſame time that he ſees thoſe things which others do not ſee, he, on the other hand, does not ſee, or does not know, what others ſee and know; as, for inſtance, when he writes, that in the veſiculæ ſeminales *nothing anfractuous or contorted is contain'd, by means of which ſome delay to the ſemen may be pretended:* or where he ſays, *of a mucous body* betwixt the cuticle and the ſkin, *I find no mention made among anatomiſts, except thoſe of Montpelier*: and to this, moreover, *Polfenus firſt attributed the colours of the ſkin, but, in particular, the blackneſs of the Æthiopians.*

But he, who does not ſeem to have read Malpighi (*r*), and others after him, who teach the ſame things, takes a great deal of pains in producing authorities from many writers, both medical and not medical, to perſuade us to embrace an opinion which has been confuted by a much greater number of authorities; I mean, that the lues venerea is a very ancient diſeaſe, and, finally, nothing more than the elephantiaſis.

This I ſuppoſe he would never have attempted to prove, if he had then had it in his power to read that very learned and able phyſician John Aſtruc (*s*), by whom theſe perſuaſions are entirely rooted out; although this, however, is ſurprizing, that he, who was not ignorant how great, and how immoderate a mixture of nations there was formerly in the Roman ſtews, while the power of the Cæſars was at its height, ſhould have ſuppos'd that there was the ſame lues at that time; but divided by phyſicians into many diſorders, and not conſider'd as one diſorder, before "a collection of them "all" was obſerv'd "in the camp at Naples:" as if there had been a greater mixture of nations in thoſe camps than formerly at Rome, where one and the ſame harlot (as Martial (*t*) confeſſes in ſo many words) proſtituted

(*r*) De Ext. Tract. Organo.
(*s*) De Morb. Vener. l. 1. c. 1. & ſeqq.
(*t*) L. 7. Epigr. 29.

herſelf

herſelf to Catti, to Germans, to Dacians, to Cilicians, to Cappadocians, to Indians, to Jews, &c.

The American nation was the only one then wanting at Rome: and in theſe camps were not wanting ſuch as had commerce therewith themſelves, or, at leaſt, by means of others; ſo that it may be eaſily conceiv'd from whence, not a new collection of diſeaſes, but the lues itſelf, came into Europe.

And you may not only obſerve a great negligence in theſe things, but alſo in the enumeration of the years from that time; which is in other reſpects very eaſy; and in the reading of the beſt phyſicians from thence quite down to the preſent age; where it is ſoon after ſaid, that the lues venerea "had "already laſted, under this title, more than three hundred years, and had "even remitted nothing of its atrocity;" ſince it is certain to every one, that this Neapolitan war had not begun before the year 1494: and by the author whom I have before quoted, I mean Aſtruc (*u*), ſo many authors are produc'd; and, amongſt theſe, ſome who, as they were celebrated phyſicians, ſo their writings are in the hands of almoſt every one: by the teſtimony of whom it is very evident, that this diſorder is become more ſlight.

After theſe remarks, and others which for brevity's ſake I omit; and, amongſt theſe, that next prognoſtic aphoriſm, "a fever, ſucceeding to a "lues venerea, ſolves the diſeaſe;" I would have you yourſelf conſider, whether we can aſcribe ſo much to his eyes, and to his diligence, as to admit of all his obſervations without any the leaſt doubt or heſitation.

16. Do not, however, imagine that theſe things are ſaid by me for any other reaſon than from a deſire after truth: as they are of an author who was not known to me while he was living, either on the ſcore of injuries or benefits; and in whoſe book I do not deny that there are alſo ſome good things. But do not aſk me, whether in that method, likewiſe, whereby he taught that this diſeaſe is to be overcome.

For from the time that this diſeaſe was known to phyſicians, that different methods of cure have been us'd by different perſons, and what had been formerly made uſe of has been deſerted in the ſame places, and that which had been exploded ſubſtituted in its room, in this diſeaſe more than in any other, I ſuppoſe no-body can be ignorant; ſo that, if you approve of any thing in preference to others, or diſapprove any thing, it is to be fear'd that, on the contrary, others may diſapprove or approve it: and not only of thoſe who are to come after us, but of thoſe who are living at preſent, in ſo great a mutability and diverſity of opinions.

For in regard to the two moſt celebrated remedies againſt this diſorder, the decoction of the woods, as it is call'd, and quickſilver, how many diſſenſions and different opinions do ſtill ſubſiſt? and not only which is to be preferr'd to the other, but, if you prefer one to the other, in what manner this is to be made uſe of.

It is certain, that, in the very beginning of this diſorder, the mercurial unctions were applied: and, afterwards, that the decoctions of the woods

(*u*) L. cit. 1. c. 14.

were

were preferr'd to them: and that mercury was again made uſe of internally; and yet that the decoctions of the woods had not, for this reaſon, become ſo exploded, as not to be ſtill had recourſe to in ſome cities in particular: nay, theſe only were preſerv'd, and both the methods of uſing mercury rejected entirely; till, at length, in the ſame cities, they again return'd to one or the other method of uſing mercury, where a very violent lues did not yield to the decoction.

I remember, when I was quite a young man, and went to Bologna, that both methods of applying mercury were ſo far deſerted, that I never ſaw any phyſician make uſe of it; or even heard of his uſing it (for the whole ſpace of eight years, during which I ſtudied phyſic there) in either one or the other way; and that was very ſurprizing in the city where Jacobus Berengarius Carpenſis had formerly flouriſh'd, and had been fam'd for the uſe of mercurial unctions, which he was one of the firſt promoters of, if not, as moſt authors imagine, the firſt inventor: certainly if he was born ſome years before 1467, as that paſſage of his, which has been produc'd by me in a former work (*x*), ſeems to ſhow; he was of ſuch an age, when the lues venerea was firſt known in Europe, that he may be ſuppos'd to have made uſe of this method in the very beginning.

But how much mercury had not only begun to be ſuſpected, but to be very rarely applied, at Bologna, before I went to reſide there; to omit ſome of the more ancient of the Bononian writers; ſufficiently appears from the *Empirica Rationalis* of Claudinus (*y*), where he ſpeaks of both theſe methods of uſing mercury: and not only of the fumigations thereof, which are very frequently pernicious; and therefore not ſo much as mention'd by me at preſent.

What remedies then, have you ſeen thoſe very excellent phyſicians make uſe of, you will ſay, againſt the lues venerea? Why the decoction of woods, either in the common method of giving them; and this for the moſt part; or in another way, wherein I have ſeen them us'd by Valſalva, and that frequently.

For having obſerv'd ſome perſons to take in a great quantity of that decoction which they call Aqua Stibiata, or Aqua *Corſi*, with ſucceſs; he ſaid, that it came into his mind to make uſe thereof, in the ſame manner that we generally make uſe of bath-waters. That he had therefore given it, at firſt, to the quantity of two or three pints, and obſerv'd whether it was eaſily diſcharg'd, and by the way of the bladder; not through the inteſtines, or the ſkin, as it ſometimes is. For if it was not eaſily diſcharg'd, or if by theſe two laſt-mention'd ways, that he deſiſted. But if it paſs'd off eaſily, and only by the urinary paſſages, that on the following day he had encreas'd the quantity, and ſo on more and more, till it came to ten pints. And that by this means he had gain'd great advantages in a little time; ſo that ſometimes, within not more than three days, he had ſeen old ulcers heal'd, and gummata depreſs'd; as in a certain knight, for inſtance, whom he particularly mention'd to me.

(*x*) Epiſt. Anat. 6. n. 2. in fin. (*y*) l. 6. S. 2. tr. 1. c. 3.

And

And certainly by this method of cure I myſelf ſaw a woman made perfectly well, who had ſuffer'd, for the ſpace of two years, under venereal ulcers; one that was very large in her knee, and three or four in her palate, which were ſmall ones indeed, but ſuch, nevertheleſs, as ſuffer'd the aliments to paſs from the mouth into the noſtrils, to the very great inconvenience of the patient: and I ſaw, in like manner, a gentleman, a fellow-citizen of mine, cur'd thereby, in whom, from the ſame cauſe, the hypogaſtrium and the thighs were cover'd with foul ulcers, to a very conſiderable extent.

And as this happen'd in the few days of drinking theſe decoctions, I could wiſh thoſe perſons to have been preſent, who, by reaſon of the very quick diſcharge of a great quantity of bath-waters, by the bladder, have imagin'd to themſelves certain paſſages, whereby theſe waters might deſcend into the bladder, without mixing and circulating with the blood; for unleſs this decoction had been circulated with the blood, and carried to all parts of the body, it could not ſo ſoon have heal'd thoſe parts that were ulcerated, or otherwiſe diſeas'd.

However, the ſame thing that came into the mind of Valſalva, in regard to the uſe of a ſtibiated water of that kind, had formerly come into the mind of Johannes Manardus (z), in regard to the decoction of guaiacum; for he ſays, "Among the various uſes of this wood, I moſt approve of that "method wherein the decoction of it is drunk, in the manner of medicated "waters, or whey ſpoken of by Dioſcorides. For from thence comes the "manner of drinking medicated waters, which is made uſe of among the "Italians in general; that is to ſay, of drinking four or five pints at in-"tervals."

And this method of uſing the decoction is ſo far approv'd by our Maſſaria (a), that he wonder'd how it could happen, that nobody, quite to his time, had follow'd "ſo clear and excellent a practice of ſo illuſtrious a "man:" and he aſſerted, that he had made uſe of this method, more than once, "with the greateſt facility, and the greateſt ſucceſs;" ſo that the patients "obtain'd, without much trouble, and in a few days, the good ef-"fects which others are ſcarcely wont to obtain after a great deal of uneaſi-"neſs, and a very long courſe of time:" and yet it did not ſeem to him; as you will find by reading over the paſſage; of any importance which of the three diſcharges, that I juſt now ſpoke of, was the conſequence.

But to return to my former ſubject; from the time that I reſided at Bologna to this time; that is to ſay, in the ſpace of almoſt four-and-fifty years; mercury was alſo again brought into the claſs of antivenereal remedies, in that city.

17. And I have obſerv'd, in a not much leſs ſpace of time, ſome viciſſitude in theſe remedies, in this city; though not ſo great a one. For as among phyſicians, in other reſpects very ſkilful, ſome were never wanting there that lov'd the ſtronger remedies, rather than the more ſafe; ſo I have heard, that though almoſt any method whatever of uſing mercury was, for the moſt part, far leſs eſteem'd than the decoctions, it nevertheleſs was at no time deſerted.

(z) l. 14. Epiſt. Medic. 4. (a) Pract. Medic. l. 6.

From

From the time therefore that I came hither, except ſuffumigations, mention of which I do not ever remember to have heard, I know that moſt other methods of uſing mercury have been practis'd; and amongſt theſe, even that of giving it internally: and this either join'd with ſuch things as open the bowels, or ſo prepar'd, as to bring on a ſalivation, or even a diaphoreſis: or of ſmearing it upon the ſkin, when mix'd up into the form of an ointment.

This laſt method, however, was more rarely us'd, and the three laſt not very commonly; but the decoction of woods very frequently: and theſe were, for the moſt part, prepar'd from exotic woods; and ſometimes, as for inſtance, for the pooreſt patients, from our own plants; on which occaſion I muſt not conceal from you what Valliſneri aſſerted to me: I mean, that having preſcrib'd to a poor man who had labour'd under a moſt violent lues venerea, for a long time together, a decoction of the roots of bardana, horehound, and the green huſks of walnuts, great ſweats were brought on, and the man was perfectly cur'd.

Moreover, I have ſeen things chang'd gradually, and ſlowly, in ſuch a manner, that unleſs the diſeaſe is very ſlight, decoctions are very rarely given to excite ſweat, but mercury is very frequently given to excite a ſalivation; unctions being almoſt deſerted: for the phyſicians alledge againſt theſe, that by this method they do not well know how great a quantity of quickſilver may enter the body, and for that reaſon are ignorant how it is neceſſary to proportion their applications.

And I wiſh to God, the preſent method of cure alſo made uſe of here, had never brought with it thoſe violent, and ſometimes fatal, diſadvantages, which I know not what extollers thereof conceal, and ſmother, among certain fictitious poſitions, and exaggerated narrations, of theirs; and that it was, for this reaſon, to be preferr'd to all others.

But conſidering what has happen'd in former times, and what now happens, and what begins to happen here again, they cannot but ſoon expect new viciſſitudes here alſo.

Not only the method of taking quickſilver internally, but the efficacy of certain properties thereof, (againſt this diſorder) which was not unknown to the profeſſors at Padua formerly, if they had eſcap'd the memory of the leſs learned practitioners; may without doubt again be forgotten: that is, when a different method of cure, and a different mode of explication, have prevail'd among moſt perſons.

And I do not think that you will enquire what profeſſors thoſe were, as I know that, to mention no others, you have read Falloppius (*b*), Tomitanus (*c*), and Saxonia (*d*): the laſt of whom deſcribes mercury as exhibited in more ways than one; that is with cathartics, and without them, "ſo as to "excite a copious ſpitting in ſome perſons:" and relates that this remedy was then us'd by a very celebrated profeſſor, and phyſician, at Padua, Albertini Bottoni.

(*b*) Tract. de Morbo Gall. c. 79.
(*c*) De Morbo Gall. l. 2. c. 15.
(*d*) Tract. de lue Vener. c. 22.

Nor is it to be doubted, but thoſe who ſucceeded afterwards in this college; though they did not make uſe of that precipitated mercury which Bottoni did; either us'd themſelves this ſublimate which is at preſent us'd, when properly dulcified; or at leaſt extremely well knew, from many books which were publiſh'd, that this had been propos'd by phyſicians of eminence in order to excite a ſalivation.

And the efficacy of ſome of the properties of mercury, againſt this lues, was not entirely unknown by two at leaſt of our ancient profeſſors, Hieronymus Fracaſtorius, and Benedictus Victorius; for the latter of theſe, though paſs'd over by Papadopolus, is ſhown to have taught here before the middle of the ſixteenth century, by Tomaſini (*e*); and the former, though omitted by Tomaſini, Papadopolus (*f*) proves to have been a profeſſor at Padua, in the beginning of the ſame century. Of quickſilver, therefore, thus Fracaſtorius (*g*):

> *Quodque eſt condenſum, humores diſſolvit, agitque*
> *Fortius; &c.*
>
> "As it is of a very denſe nature, it diſſolves the humours, and acts "very powerfully; &c."

And Victorius thus (*h*): "By its gravity it penetrates the ſkin of the "body, being, by ſome means, actuated by the heat of the body: and ſoon after alſo, when it has enter'd the body, mention is made of its "gravity."

18. I paſs by other things that our Tomitanus (*i*) took notice of, as if from other perſons, in regard to "the very ſlender, the very ſmall, the "minute particles" of which mercury conſiſts; that I may ſubjoin the obſervation and the *conſilium* of our Trincavelli (*k*) likewiſe, which relates to the diſeaſe in queſtion, and at the ſame time to theſe baths of the ancient Aponus.

Being conſulted for a noble matron; who had this lues join'd to many other diſorders; after having propos'd other things, and come to two which ſeem'd to be capable of being particularly uſeful, the decoction of guaiacum-wood, and the bath waters; and having anſwer'd that the former was likely to be uſeful, not only againſt the lues, but againſt the other diſorders alſo; when he goes on to ſpeak of the waters, and their manifold uſe by drinking, waſhing, and receiving them on the body, when dripping from a pretty high place, he ſays; the other diſorders indeed, and the cauſes of them, "we "may hope they will perfectly overcome: but as far as relates to this lues "venerea, or gallica, I ſhould believe they would be of very little or no "ſervice to that: nay, if I muſt confeſs the truth, I think I have obſerv'd, "that they are generally rather hurtful, to thoſe who labour under this "diſorder, than advantageous."

(*e*) Gymn. Patav. l. 3. c. 8. ad A. 1532.
(*f*) Hiſt. Gym. Patav. l. 3. S. 2. c. 11. n. 55.
(*g*) Siphil. l. 2.
(*h*) l. de Morbo Gall. c. 7.
(*i*) c. 15. paulo ante cit.
(*k*) l. 2. Conſil. Medic. 63.

Is not this an obſervation modeſtly propos'd? The conſilium follows: "But at length, to open to you the whole of my ſentiments in this affair: I "would make uſe of both remedies: and would firſt try the decoction of "the wood; and afterwards would have her brought to Padua to the "baths." In this manner then, even in the year 1561, did the Paduan profeſſors obſerve. And thus did they anſwer to thoſe who conſulted them.

And if any perſons, leſs converſant in their monuments, are perhaps ignorant of that; they will not, therefore, pour darkneſs and ſhades upon the glory of their predeceſſors, as if they had confirm'd it by no obſervation, and eſpecially by ſo eaſy a one. And indeed, that which is added to this ſection of the Sepulchretum, from the conſultation of Guarinoni, does not ſeem to differ from thoſe things which Trincavelli had remark'd.

Nor do they differ, certainly, which Andrew Bacci (*l*), a very celebrated writer upon warm baths, has ſaid. For although he judges, that not all warm baths are noxious in this diſorder (in which we muſt certainly give credit to his experience, and that of others, even modern, and very famous men), he expreſsly affirms that the Aponian baths are injurious; and he even ſays, "I know that the ſame thing has happen'd to a certain illuſtri-"ous prince, at the Aponian baths; I mean, that he, unmindful of his paſt "venereal contagion, brought back upon him his old pains, from the uſe "of the baths."

Perhaps, likewiſe, you would not imagine any thing foreign to probability, if, to the other cauſes for which that very great concourſe of patients to the Euganean baths, near Verona; that had continu'd down from the moſt ancient times, has now decreas'd; you ſhould alſo add this; that they muſt not only have ceas'd to be uſeful to a great number, but have been injurious, in proportion as the number of men who are affected with the venereal diſeaſe, among others, either openly, or occultly, is increas'd.

But if this diſeaſe, as it was imported into Europe, ſhould, at length, at any time, as Fracaſtorius (*m*) hop'd, entirely be driven therefrom; and phyſicians ſhould not be wanting at that time, who might be adorn'd with great, but with juſt praiſes; I have ſcarcely any doubt, but the reputation of the Aponian baths; which is at preſent much diminiſh'd, indeed, for other reaſons, but, on the ſcore of their admirable properties, was never wholly loſt; would again become far different from what it is in the preſent age, and what it will probably be for ſome conſiderable lengths of ſucceeding time: unleſs the ſingular ſkill of two friends, whom you know, in enquiring into the nature of theſe fountains, and their diligence in obſerving and publiſhing their effects, ſhould, by holding up the ſucceſsful inſtances of their uſe before the eyes of all mankind, allure, with a kind of new invitation, a much greater number of patients to ſeek health for themſelves in theſe places.

19. Now ſince the love of truth has impell'd me to ſhow what ought to be reſtor'd to the ancient teachers of this college, neither will I conceal this which relates to the controverſy ſpoken of above (*n*); I mean, that they

(*l*) De Therm. l. 3. c. 2. in fin.

(*m*) De Morb. Contag. l. 2. c. 12.

(*n*) n. 15.

thought the ſame in regard to the novelty of the lues venerea, as moſt other learned men have thought: and that they denied its being known to Hippocrates, Galen, and Avicenna, with ſo much the greater authority, as they were more converſant in their writings than ſome of their ſucceſſors, to whom it has ſeem'd differently; and, amongſt theſe, to that otherwiſe very learned man Carolus Patinus.

For this author, in the beginning of the ſcholaſtic year 1687, in order to open the exerciſes of his office "by this paradox;" I make uſe of his own words (*o*); made and publiſh'd an oration with this title, "That the lues "venerea is not a new diſorder;" in which, however, the celebrated Aſtruc would have found nothing that had not been ſufficiently refuted by him, or might not be ſufficiently refuted in the ſame manner.

But this author imagin'd that oration never to have exiſted (*p*), for this reaſon, that Papadopolus had made no mention of it in the hiſtory of our college, where, ſpeaking pretty much at large of Patin (*q*), he has enumerated, in a particular manner, his works.

As to Papadopolus, however, who was a very learned man, and deſerv'd very well of this college; as he had not ſufficient time for writing, proportionably to the multiplicity of his matter, and the largeneſs of his work; it is not ſurpriſing if he, undeſignedly, paſs'd over ſome things both in the lives of the profeſſors and of the pupils, and particularly in enumerating their lucubrations; of which he has told us, in his preface, "that he has "added the beſt catalogue he could procure, under each of their names."

I, then, as to what relates to the teachers of the ſeveral arts in particular, will not omit to ſupply the defect of his writings in ſome meaſure, as occaſion ſhall offer itſelf: and this ſo much the more eaſily in regard to Patin, becauſe there are, among our books, two volumes in which he has diſpos'd his own opuſcula nearly in that order wherein they were publiſh'd; and moſt of them corrected and increas'd, by his own hand, in the manner he intended they ſhould have been once more publiſh'd.

What Papadopolus, therefore, has omitted in the firſt volume, are the following works: "That a phyſician and ſurgeon may, without any diſgrace "to his art, attend to the cure of beaſts: an oration.---On the phœnix im-"preſs'd upon the coin of the emperor Antoninus Caracalla: an epiſtle.--- "An oration on the city of Vienna being ſet at liberty:" which two are written in the name of his daughters.---"That practical medicine is not "enough eſteem'd: an oration.---That a phyſician ought to be ΠΟΛΥΜΑ-"ΘΗΣ, or very learned: an oration.---A commentary upon three Greek in-"ſcriptions lately brought from Smyrna.---ΕΡΩΤΗΜΑΤΑ ΙΑΤΡΙΚΑ, or me-"dical queſtions, in regard to the phyſician.-- Philoſophical and medical "theorems upon life and death.---That the circulation of the blood was "known to the ancients: an oration.---The flowers of theoretic medicine. "---Public exercitations on fevers;" that is to ſay, not an oration, as Papadopolus was willing to prove, but a ſynopſis of the lectures that he was to give.

(*o*) Pag. penult.
(*p*) De Morb. Vener. l. 8. S. 17. ad A. 1687.
(*q*) S. 2. ſupra ad n. 17, cit. c. 35. n. 159.

And out of the other volume are omitted the following works: "Political theſes on liberty and ſlavery.---Medical opinions upon fevers.---The "idea of the human head: an oration.--An oration deliver'd in the Dodo-"næan academy at Venice.---The flowers of practical medicine.---That the "lues venerea is not a new diſorder: an oration.---Public exercitations upon "particular diſeaſes of the thorax and abdomen.---A commentary upon an "ancient monument of Marcellina, lately brought from Greece.---That in "the cure of fevers, the urine ought to be attended to: an oration.---A "commentary upon the ancient honorary ſepulchre of Marcus Artorius, "phyſician of Auguſtus Cæſar.---Public exercitations on the diſeaſes of the "head.---An oration upon ſpecific remedies.----Medical and chirurgical "flowers."

Why Patinus did not interpoſe betwixt theſe two laſt writings, as the order of publication requir'd, an oration which I have by me in a ſeparate ſtate, intitled, "Vain aſtrology altogether unworthy of the phyſician;" and which he had deliver'd here, committed to the preſs, and afterwards publiſh'd; I no more know, than why the two volumes of opuſcula, whereof I have ſpoken, were left ſo neglected by him, that, unleſs they had come into my hands, little papers might eaſily have been dropp'd and loſt; for ſuch papers he had inſerted, here and there, in great number; without being connected by means of any paſte or glue; which, beſides amending ſome things in theſe opuſcula, exceedingly well illuſtrate and much increaſe others.

Theſe papers, however, have been now accurately read over by me, and collated; and each faſten'd by glue to its proper place whereto it belong'd: ſo that theſe writings may very eaſily be brought out again in a ſecond edition, as the intention of their very learned author had been, either by me, if I ſhould at any time have ſufficient leiſure, or by others.

And theſe papers relate to the commentaries I have mention'd, ſome upon the ſepulchre of Marcus Artorius, a greater number upon the firſt and ſecond of the three inſcriptions from Smyrna, and a very great number upon the monument of Marcellina. To which laſt is added a manuſcript epiſtle, and not a very ſhort one, ſent by that famous man Gilbertus Cuperus to Patinus; which, if I am capable of judging, is worthy of them both.

Nor do I doubt but Patinus intended to have publiſh'd this alſo, as he had laid it amongſt his papers; if an aneuriſm of the great artery, by which I ſuppoſe him to have been kill'd, rather than by the polypus concreted within it, as is generally the caſe (*r*), had not prevented his deſign.

If this had been done, that very learned man would have ſhewn how much more capable he was of explaining ancient coins and monuments, than of confirming that medical paradox of the antiquity of the lues venerea, by paſſages from Avicenna and Galen; and even, with divine permiſſion, from paſſages of Hippocrates himſelf. Farewel.

(*r*) Vid. Paſtæ Epiſt. de Cordis polypo in dub. revoc. n. 5.

LETTER

LETTER the FIFTY-NINTH

Treats of Diſeaſes that are brought on by Poiſon.

1. THE tenth ſection that ſucceeds in the Sepulchretum relates, partly to occult and chronical diſeaſes, and partly to thoſe that are brought on by means of poiſon. But there is much more utility in ſpeaking of the latter than of the former, on this occaſion. For the former are put down, each by its obſervator, either with no ſigns at all, or with ſome only: if with no ſigns, you can ſcarcely reap any advantage from the diſſection ſubjoin'd; but if they have any ſymptom adjoin'd; as, for inſtance, a fever, a vomiting, a difficult reſpiration, or any thing of that kind; they certainly might have been transferr'd, with much more advantage, into thoſe ſections wherein theſe ſymptoms are each of them treated with particular regard.

And as this is done in reſpect to ſome obſervations referr'd to in this ſection, ſo it ought to have been done in reſpect to others; as it might with very great propriety. You ſee, then, why in this part I do not follow the Sepulchretum, and even why I cannot follow it, as I have thrown the obſervations of this kind, every one in their proper places, into other letters.

2. But in the other part, which relates to poiſons, I ſhall readily follow it: and will immediately communicate to you a few examples that have been obſerv'd by me, (for from Valſalva I have none) or by our Mediavia. This firſt is Mediavia's.

3. A woman, of ſixty years of age, having juſt din'd, ate up ſome little rolls of almond-paſte, which were laid in a by-place in the upper part of the houſe: this ſhe did unknown to her maſter, who had laid them there

Scarcely had an hour paſs'd but ſhe began to be ſeiz'd with a kind of ſenſation in the ſtomach, as if ſhe were troubled with flatus. And this continuing a very long time, and after that growing more and more violent, ſhe both vomited up, and diſcharg'd by ſtool, a great quantity of matter; and by theſe means ſhe ſeem'd to be eas'd.

But ſoon after, a more violent uneaſineſs returning, and not without fainting-fits, ſhe at length confeſs'd what ſhe had eaten; but this confeſſion was too late. For theſe rolls of paſte, having been prepar'd in order to kill mice, had arſenic mix'd with them.

Within twelve hours, therefore, after ſhe had eaten them, being rather depreſs'd in her ſtrength, than affected with very ſharp pains, or evident convulſions,

vulſions, this miſerable old woman died; and thereby ſuffer'd for the childiſh curioſity of her appetite.

The body was examin'd, and diſſected, on the following day, by public authority. This was about the 7th of May, in the year 1727. The poſterior ſurface of the body, not excepting even the calves of the legs and the heels, were univerſally black. The body itſelf was not rigid. The belly was not tumid: and this cavity and the ſtomach being open'd, the internal ſurface thereof was eroded here and there, eſpecially at the antrum pylori: the arſenic itſelf being ſeen to adhere to the eroded parts betwixt the little pieces of membranes. Nor was the duodenum free from eroſions.

In the thorax, the lungs were blackiſh: in the heart were two polypous concretions of the ſhape and length of a finger; whereas, otherwiſe, the blood was found to be fluid, and of a lively red colour, in all the veſſels.

4. As in other diſorders, ſo alſo in diſeaſes which ariſe from poiſon, neither the ſymptoms, nor the effects, can be expected to be entirely the ſame in all perſons. For in different bodies are different conſtitutions, both of the fluid and ſolid parts; eſpecially thoſe that relate to the ſtomach: and, beſides, the emptineſs or fulneſs of that viſcus, and theſe from aliments of different kinds, may be the cauſe why poiſons, although the ſame, and really of the ſame weight, (for they may be the ſame in name, but differently prepar'd) do not, nevertheleſs, diſcover themſelves by the ſame ſigns and effects.

Arſenic, for inſtance, by which word we mean that which is white, and is frequently join'd with the adjunct of chryſtalline, is itſelf, as thoſe very learned men Mead (*a*) and Boerhaave (*b*) affirm, factitious; and, therefore, may be differently prepar'd by different perſons; ſo that, although you read in the works of Mead, that it is wholly ſoluble in water, you may read in other authors, not only that its particles were obſerv'd in the ſtomach; as in the woman in queſtion; but were alſo known to be arſenic from hence, that little pieces of it had remain'd in warm water, like white little ſtones: as you have it in the hiſtory of Wepfer, which is the firſt in obſervation the thirteenth, among the additamenta to this ſection of the Sepulchretum.

This hiſtory ſpeaks of a little boy of two years of age, who had been emaciated by preceding fevers; and two almoſt adult girls, who were in very good health; the former of whom had taken but two ſpoon-fuls, and the two latter the remainder, of a pudding in which arſenic was mix'd, the one with an empty ſtomach, the other two with ſtomachs full of meat: the firſt did not vomit: the others vomited frequently, and in a large quantity afterwards, being aſſiſted by remedies.

Theſe differences were attended with different events. The girls eſcap'd. But the little boy, in whom no convulſions were obſerv'd, among the other ſymptoms, had his ſtrength decreaſe more and more till he died, the ſtomach being internally ulcerated; and the lungs of a black colour degenerating into lividneſs.

In the ſame place you will ſee other examples produc'd of children, who, having vomited immediately, or not many hours, after having ſwallow'd ar-

(*a*) Expoſ. mechan. Venenor. Tent. 4. (*b*) Element. Chem. Tom. 2. P. 2. ubi de Sulph.

ſenic,

ſenic, and being aſſiſted by remedies, recover'd, Among the ſymptoms, a tremor of the limbs is mention'd in one (*c*). But a boy who had lick'd up arſenical paint, or red arſenic (*d*), and who was nine years of age, and had not made uſe of medicines till after the fourth day, is ſaid to have periſh'd in convulſions.

Nor are the terrible convulſions which preceded the death of a girl (*e*), who vomited very late after taking, as they ſuſpected, a corroſive poiſon, omitted. A boy, of four years of age (*f*), and his little ſiſter, who was ſomewhat more than a year old, both of whom vomited pretty early, eſcap'd; convulſions being obſerv'd in the latter, but not in the former.

But in theſe alſo the poiſon, which was in other reſpects corroſive, was to all appearance unknown; as alſo that in a woman (*g*), in regard to whom thoſe convulſions are not obſerv'd; and who, if you attend to nothing elſe but that ſhe threw up blood by the mouth, might ſeem to have died of ſublimate mercury: ſince not only Ardoynus (*h*) has ſpoken of vomiting of blood as being one of the firſt ſymptoms of this poiſon, but Wepfer alſo, in the fourteenth obſervation (*i*), ſaw both bloody vomitings and bloody ſtools (which even Ardoynus has not omitted) in a dog, that he has expreſsly ſaid had never been convuls'd, nor had its limbs rigid after death; but had its inteſtines and ſtomach inflam'd, as that woman had in part, both internally and externally, and the blood no-where concreted, either in the heart or in any of the veſſels.

And this I have hinted at, without being ignorant how much the celebrated Mead (*k*), who ſaw globules in arſenic like to thoſe in quickſilver, thinks that theſe agree with ſublimate mercury in their manner of becoming deleterious.

But let us return to thoſe things, moreover, that are added in regard to arſenic itſelf, in the thirteenth obſervation before-mention'd. What happen'd to two dogs after eating arſenic is ſcarcely ſaid (*l*), except that they died: yet in their bodies after death, how far the ſtomachs of both of them were inflam'd; and the coats of that viſcus extenuated in one of them, the inteſtines eroded and perforated, and that in the cavity thereof was black and grumous blood; is not omitted.

Finally, it is alſo ſaid (*m*), that mountebanks and jugglers ſwallow down arſenic into ſtomachs full of fat and oily ſubſtances, without any miſchief enſuing, as they ſoon after vomit it up privately; but that they periſh, if they are oblig'd, contrary to their cuſtom, to defer vomiting. But all theſe things are contain'd in the additamenta; where this alſo is ſaid: that a cat (*n*) which had been made very ill by arſenic, having a vomiting brought on by a little piece of tobacco being thruſt in with his food, recover'd thereby.

And in this ſection itſelf, that obſervation is particularly to be attended

(*c*) Hiſt. 2. (*d*) Hiſt. 8. (*i*) Hiſt. 2. (*k*) Tentam. cit.
(*e*) Hiſt. 9. (*f*) Hiſt. 10. (*l*) Hiſt. 12.
(*g*) Hiſt. 11. (*m*) Vid. etiam Schol. ad Obſ. 3.
(*h*) De Venen. l. 2. c. 5. (*n*) In eod. Schol.

to

to (*o*) which confirms what has been juſt now aſſerted. That is to ſay, a diſh came on, in the laſt courſe, wherein arſenic had been mix'd inſtead of flour; and the gueſts, who had as yet eaten and drunk very little, were carried off immediately after taking the poiſon: but they who had diſtended the ſtomach with food, and with drink, were cur'd by means of vomiting; yet with this circumſtance, that in their bodies after death (notwithſtanding they did not die till many years afterwards) there appear'd marks of eroſions that had, nevertheleſs, been extenſive and deep. And if you read over what follows next from Parey (*p*), you will, perhaps, not diſapprove what I conjectur'd a little before of that woman.

There are, beſides, in the Sepulchretum, other obſervations relative to poiſon; although, contrary to what is generally done elſewhere, they are not referr'd to in this ſection.

You will find them in the ſeventh and eighth ſections of the third book; in the former ſeven, or rather ſix; for that which is propos'd in the ſeventeenth obſervation, in the ſecond place, is ſo evidently the ſame as that which had already been produc'd in the third obſervation, in regard to a profeſſor at Padua, that it is aſtoniſhing it had not been obſerv'd: and in the other ſection, five or ſix; the firſt of which, that is the fifth, relates particularly to arſenic; about twelve little pieces of which were found to adhere ſo cloſely to the coats of the ſtomach, that they could ſcarcely be pull'd away: the ſame coats being extenuated, as we have ſaid they were in the dog; and the fundus of this viſcus being, beſides, eroded and inflam'd; and the carcaſe quite livid on the back part.

But beſides vomitings and ſtools, no other ſymptoms are taken notice of. And the other ſymptoms which we have enumerated in both the ſections, relate either to other poiſons, or to ſuch as were unknown. The effects of which, when conſider'd in the dead body, were generally an inflammation and eroſion of the ſtomach and inteſtines; but in living bodies there were different ſymptoms at different times: yet none was more frequent than vomiting; inſtead of which, if there was at any time, or ſoon after ſucceeded, a fruitleſs effort to vomit, the patients then were worſe, and died ſooner, than thoſe in whom the other ſymptoms ſeem'd to be equal.

And as this ſymptom of vomiting is alſo common to thoſe, in the ſame manner, who have taken arſenic; if you ſhould happen to enquire what, beſides this, has been obſerv'd to be moſt frequent, you will find that it has been dejection of ſtrength, or ſuch circumſtances as denote it; I mean, a coldneſs of the extremities, or of the whole body; cold ſweats, paleneſs, and ſometimes a ſyncope itſelf.

This dejection of ſtrength; which depends upon the ſtomach being affected, and drawing the heart into conſent, by means of the nerves; a very uneaſy anxiety, as I ſuppoſe, rather than a ſharp and cutting pain, precedes and accompanies. At leaſt, in thoſe perſons whoſe ſymptoms we have deſcrib'd, and even in children, or in dogs, we do not read that there were any clamours; but we read of an anxiety in two children, which children ſcarcely know how to expreſs.

(*o*) § 5. in Obſ. 4. (*p*) Ibid. § 6.

However, in one the ſymptoms of tormina and ſingultus are remark'd; in one a tumour of the abdomen; in ſome a thirſt; in others a ſwollen tongue, or apthæ in the mouth; or an impeded deglutition: or a ſenſe of burning and heat. And in whom convulſions were manifeſt, or not manifeſt, has been pointed out above.

But ſome of theſe ſymptoms have now and then happen'd, and ſome pretty frequently, from other corroſive poiſons alſo.

And indeed, when you ſhall depart from the Sepulchretum; in which alone, conſider'd with a view to the effects of arſenic and ſublimate mercury, thoſe things that I juſt now ſaid of clamours, and pains, and what I hinted at above, in regard to bloody excretions, ſeem reaſonable to be ſaid; I do not doubt but you will immediately think otherwiſe, and not without good reaſon.

5. That you therefore may read over, and compare, the more attentively, the hiſtories which we have not in the Sepulchretum; I will immediately point out a conſiderable number: and all of them likewiſe relating to mineral poiſons. From the glaſs of antimony (which had been heedleſsly given to a coachman) among other ſymptoms, the celebrated Baeumlinus (*q*) obſerv'd bloody ſtools; ſpaſmodic motions; and finally, death itſelf; the ſtomach being internally abraded, and ting'd with a red ſpot, near the pylorus.

Although the dog, into which Jo. Adr. Sproegelius (*r*) had forc'd the ſame glaſs, ſuffer'd nothing but ſtrong convulſions, while he attempted to vomit, but, by reaſon of his mouth being tied up with a muzzle, could not; yet that experienc'd man (*s*) has admoniſh'd us, that the nature of brutes, which is "much ſtronger than ours, and for the moſt part extremely different "therefrom," may overcome thoſe poiſons which our nature cannot.

And indeed, obſervations are extant (*t*), which ſhow what paralyſes and convulſions, join'd with howlings, have been the conſequence of the glaſs of antimony in another dog; and in what part of the ſtomach an evident inflammation aroſe; ſo that if he had not been open'd while he was yet alive, perhaps more violent ſymptoms might have been brought on: and they ſpeak alſo of a woman, who, by reaſon of having taken in a quantity of this glaſs, fell down upon the ground, after enormous vomitings, and lay like a dead perſon, rigid and convuls'd; but was ſoon after ſeiz'd with a very violent pain in one foot, which was ſucceeded by a gangrene and ſphacelus; ſo that, as in the caſe of the coachman, this medicine did not bring on the proximate cauſe of death in this woman, but nevertheleſs gave occaſion and origin thereto.

Another experienc'd man, Jacobus Fælix (*u*), having given emetic tartar to a dog, and open'd him while he was yet vomiting, ſaw a very great inflammation at the pylorus for the ſpace of ſome inches.

(*q*) Commerc. Litter. A. 1739. Hebd. 16. n. 1.

(*r*) Experim. circa varia venena &c. Exper. 41.

(*s*) Ibid. §. 50.

(*t*) in Additam. ad Sect. hanc Sepulchr. Obſ. 12. Hiſt. 2. & 3.

(*u*) Experim. 11. inter ea quæ addidit Diſſert. de Mot. periſt. inteſtin.

It does not eſcape me, that there are very celebrated men (*x*), who contend that true arſenical particles have never yet been demonſtrated in antimony: nor have I, for that reaſon, quoted theſe examples; and ſtill leſs will I produce, from the celebrated Henckel (*y*), that of butter of antimony being given through miſtake, and a conſtriction of the fauces and ſtomach immediately coming on; together with a very great heat; and after that, for months and years, ſuch diſorders of the ſtomach, as to make it evident, that unleſs milk had been immediately and largely given (and this was done alſo in the caſe of the coachman, but too late, and therefore to no purpoſe), which; not ſo much by aſſiſting the vomiting, as by entangling and confining the very ſharp and corroſive poiſon amidſt hard curds, and cheeſe-like coagula, that were thrown up in great number; brought relief to the patient, he muſt have periſh'd in a moſt miſerable manner.

Yet there would not have been ſo eroſive a quality in that poiſon, if it had not been prepar'd with ſublimate mercury. But that you may compare the effects of this mercury with the effects of that butter, read the cure of Kramerus (*z*), which was happily brought about, not by milk only, but by the mixture of oil of tartar per deliquium, as it is call'd, and other things; in order to rectify and correct the mercury.

You will find that there were ſuch eroſions of the mouth, the œſophagus, and ſtomach, before the remedies were adminiſter'd, as caus'd great quantities of blood to be diſcharg'd, both by vomiting and ſtool; and that very frequently; together with writhings, tormina, deliquia, convulſions, and other ſymptoms of that kind.

And Baccius (*a*) obſerv'd, from the ſame ſublimate mercury; but to all appearance in leſs quantity, and certainly taken with other things; ſevere tormina and violent vomitings; by means of which, at length, a purulent and "burnt" ichor was diſcharg'd after three days, and therewith alſo life itſelf. What appearance was found upon diſſection, if any diſſection was made, he does not ſay.

Sproegelius (*b*), however, having given ſublimate mercury to a cat and a rabbet, relates that the former died within the firſt five minutes, and the latter as ſoon as ever the poiſon was taken in; and that without any preceding ſymptoms, except very ſlight convulſions in the former, and in the latter, a vomiting: and he adds, that in the cat, the internal coat of the ſtomach was every where inflam'd, moſt in the fundus, but no where in the latter; nor indeed could it be by reaſon of the cole-worts which had been eaten juſt before; but that death had come on ſo ſpeedily, becauſe the poiſon being given with water, and diſſolv'd therein, had immediately exercis'd its force upon the nerves.

But when he had given it to a dog in like manner (*c*), whoſe ſtomach was empty, he found the villous coat thereof, in this animal, every where fill'd with the ſpiculæ of the poiſon; and for that reaſon partly red, and partly

(*x*) Commerc. Litt. A. cit. Hebd. 24. n. 1.
(*y*) Act. N. C. Tom. 5. Obſ. 95.
(*z*) Commerc. Lit. A. 1735. Hebd. 30. n. 3.
(*a*) De Venenis &c. ubi an venenum nutriat. &c. n. 6.
(*b*) Exper. cit. Exp. 26. & 29.
(*c*) Exp. 28.

livid: as he alſo ſaw the whole mouth, and even the ſtomach, but particularly the upper orifice of it, very much inflam'd, black, and gangrenous; notwithſtanding he diſſected the animal when it was yet living, and after he had obſerv'd it to vomit with violent ſtrainings for an hour or more; the ſtrainings being join'd with inquietude and howlings.

In none of theſe three animals, except the firſt, has he made mention of black and coagulated blood in the heart. I ſee one experiment only of Jacobus Fælix (*d*) of the ſame kind of poiſon being given, though with an equal weight of arſenic at the ſame time: this experiment was on a dog, which he open'd immediately after having twice vomited, inſtantly from taking the poiſon into the ſtomach: yet he found a violent inflammation of the ſtomach.

And this he found in the ſtomach of another dog alſo (*e*); eſpecially towards the pylorus, and to a very violent degree in the neighbouring inteſtines; but the ſlighter in proportion as it came nearer to the large inteſtines. It is true, he cut open this dog alive; but not till after he had vomited nine times: whereas he had given nothing poiſonous but arſenic. And as the queſtion is here, principally, of this poiſon, according to the tenor of the hiſtory I have propos'd (*f*); I will not omit the experiments made by Sproegelius (*g*), either with this poiſon, or others of the ſame kind.

He forc'd into the ſtomach of a cat, and a dog, a quantity of "white "crude" arſenic. Strainings to vomit being obſerv'd, together with marks of anxiety, and convulſions, or concuſſions; both the animals were open'd before they died: and in the ſtomach, which, both about the pylorus, and in every other part, was inflam'd, he found coagula of blood that had been extravaſated betwixt the rugæ, or among the villi, and concreted there: and in the dog, this kind of blood ſurrounded the arſenic.

Cobalt, which is the ore of arſenic, having been thrown up in vomiting, by one or two dogs, without any injury; he tied up the mouth of another (*h*), that the animal might not vomit: and the moſt violent efforts to vomit came on; together with anxiety, convulſions, weakneſs, and, within a very few hours, death.

In this dog the ſtomach was, in ſome places, a little livid, and every where greatly inflam'd, as the inteſtines were alſo; but proportionably leſs, as they were more diſtant from the ſtomach. Nor are obſervations wanting of the fatal effects of cobalt, when taken into the ſtomach, in human bodies; ſo that one, of the celebrated Kundmannus (*i*), contains the death of three at leaſt, which follow'd from thence within a few hours; all of them having been ſeiz'd immediately with the moſt violent tormina, enormous vomitings, and cold ſweats: the back part of the bodies after death being livid, the ſtomach very much inflam'd, and a bloody humour flowing from the eroded veſſels of that viſcus.

The ſame obſervation alſo ſpeaks of the death of a woman, after tormina and vomitings of that kind; death coming on within a few hours after ſwal-

(*d*) addit. ad Diſſert. cit. Exp. 10.
(*e*) Exp. 9.
(*f*) n. 3.
(*g*) Exper. cit. Exp. 30. & 31.
(*h*) Exp. 35.
(*i*) Act. N. C. Tom. 5. Obſ. 102.

lowing red arſenic. And as to yellow arſenic, or auripigmentum, as it is call'd; what ſenſe of heat and eroſion, and how many repeated vomitings and ſtools have been excited thereby; and in how great quantities; Gerbezius (*k*) will inform you: and from him you will alſo learn, that it almoſt kill'd a whole family, ſome of whom diſcharg'd blood from the mouth and from the inteſtines; and that it kill'd a girl entirely: ſo that what you will read in Heydius (*l*), of chryſtals being taken out of auripigmentum, and given to a hen, whereby ſhe was kill'd; and this by means of a flux of the inteſtines being brought on; is leſs to be wonder'd at.

And although litharge has no relation to arſenic, but to lead; yet it is worth your while to read the experiment made, by Brunnerus, upon a dog, by giving him this poiſon diſſolv'd and boil'd in vinegar; and his account of the diſſection: and the obſervations alſo of Jo. Jac. Franc. Vicarius (*m*), made upon perſons who had drunk of wine, into the caſks whereof, litharge, boil'd with bole, had been thrown, in order to correct its acidity, deſerve your notice and attention.

Nor are others leſs worthy of attention; as, for inſtance, one of the celebrated Jo. Mat. Mullerus (*n*), and another of the celebrated Juſt. David Hammerus (*o*). For from the tormina, vomitings, ſtools, anxieties, deliquia, and thirſt, which we read of in the firſt; and from the thirſt, heat, and bloody ſtools, that are read of in the ſecond; and alſo from the ſpeedy death in both caſes; and in like manner, from the ſpots of the whole body, the red marks of the whole alimentary canal, and the ſubtile perforation of the inteſtinal coats, in ſeveral places, which we read of in the firſt; and from the black colour of the body poſteriorly, the great external inflammation of the ſtomach and all the inteſtines, and the internal eroſion of thoſe parts, that are propos'd in the ſecond; it is very certain, that a corroſive poiſon had occaſion'd theſe appearances in both caſes: although what this was, by no means appears for a certainty.

But it is certain, that, in the hiſtories I ſhall point out briefly, both the ſymptoms, and the diſeas'd appearances of the viſcera, were the conſequences of arſenic having been taken in. Preuſſius (*p*) mentions a conſtriction of the fauces and cheſt; a thirſt, heats, gnawings, tormina, very great vomitings, and frequent inteſtinal diſcharges. Mullerus (*q*), whom I have already commended; beſides theſe ſymptoms, and pains of the belly; ſpeaks alſo of the ſwelling of this cavity immediately, and anxieties. And Maurice Hoffmann (*r*) likewiſe takes notice of a ſpeedy ſwelling of the belly, but a much more conſiderable one; a lividneſs of the face and eyes; and contortions of the neck.

The celebrated Heimrechius (*s*) mentions continual vomiting, for four-and-twenty hours ſucceſſively, together with horrible clamours, a tremor of

(*k*) Eph. N. C. Dec. 3. A. 5. & 6. Obſ. 137.
(*l*) Obſ. Med. 49.
(*m*) Dec. modo cit. A. 4. Obſ. 100.
(*n*) Eph. N. C. Cent. 5. Obſ. 51. in Schol.
(*o*) Commerc. Litter. A. 1738. Hebd. 10. n. 3.
(*p*) Eph. N. C. Cent. 3. Obſ. 15.
(*q*) Obſ. paulo ante cit. & Schol.
(*r*) Eph. N. C. Cent. 9. & 10. Append. n. 1. Obſ. 38.
(*s*) Act. N. C. Tom. 2. Obſ. 10. circa medium.

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the limbs, and a palſy of the feet. The celebrated Jo. Phil. Wolffius (*t*) ſpeaks of very ſevere pains of the ſtomach and belly; join'd with a cholera morbus. Hammerus, whom I have quoted above (*u*), and the moſt excellent Quelmalzius (*x*) alſo, mention very ſevere ſymptoms: the former violent vomitings, great weakneſs, and contractions of the limbs; and the latter, moreover, anxieties, cardialgias, a ſwelling of the eyes and the whole head, very ſevere, cutting, and eroding pains of the inteſtines, heats, and other ſimilar effects.

But as the arſenic in theſe caſes, in general, though not in all, was in great meaſure thrown up by theſe vomitings; and as whatever remain'd thereof, and the beginning diſorders ariſing therefrom, were invelop'd and reſtrain'd by mild oily medicines, and particularly by milk; I ſhall point out other obſervations made, both before death and after, upon thoſe who could not be ſav'd.

Etmuller the ſon (*y*) relates of a girl, that having taken arſenic, and thrown up a great quantity of viſcid fluids in the beginning of the night, ſhe was found dead in the morning: and yet the carcaſe, beſides a kind of livid and blueiſh tract externally, did not, when diſſected ſoon after, ſhew any appearance in the viſcera, that you could impute to the poiſon: there was no where any thing putrid, or fœtid in the inteſtines; no inflammation or eroſion in theſe viſcera, or in the ſtomach: although the ſtomach, among other things, contain'd a white powder, which, when thrown upon burning coals, afforded an arſenical fume; and a powder ſimilar thereto, which had been found in the houſe, being forc'd into the ſtomach of a little dog and a cat, kill'd the former in an hour and a half, and the latter in three hours, after having excited very great vomitings: the ſtomach of the cat being inflam'd in a ſmall part, and that of the dog in a large part; as was alſo the neighbouring inteſtinum duodenum, near to which there was an enormous eroſion.

But from theſe effects the ſtomach of the girl ſeems to have been defended, by the great quantity of viſcid matter and food, which ſhe had before taken; yet not ſo from the irritation of the internal coat, and of the nerves that go thereto.

And examples are produc'd of arſenic being applied even externally, and exerting its efficacy; either where there are ulcers of the ſkin (in regard to which affair, as it does not greatly relate to the preſent queſtion, we refer you to thoſe things that I have written in a former letter (*z*)) or where it is ſound; to the examples of which kind, that, in particular, may be added, on which the obſervation of Heimrechius, juſt now quoted, turns; whether you conſider the celerity wherewith it was injurious, or the violence and obſtinacy of the injury, when arſenic was ſprinkled on the hair, inſtead of what is call'd Cyprus powder: not to ſay when it was endeavour'd to diſtinguiſh it by ſmelling.

(*t*) Eorund. Tom. 5. Obſ. 29. in fin.
(*u*) Commerc. Litt. A. cit. Hebd. 27. n. 2.
(*x*) Commerc. ejuſd. A. 1737. Hebd. 28. n. 2.
(*y*) Eph. N. C. Cent. 3. & 4. Obſ. 126. cum Schol.
(*z*) Epiſt. 55. n. 12.

Yet

Yet becauſe, in the ſtomach of the girl in queſtion, neither puſtules, nor tumour, nor redneſs, were ſeen; for that reaſon, I ſuppoſe, examples are not omitted of injuries of another kind, and theſe attended with the greateſt danger: which, though they generally ariſe from taking arſenic, are alſo frequently brought on by the vapours thereof.

But let the caſe be however it will in this girl; there will be no occaſion to enquire very ſtrictly, how three or four others, whoſe hiſtories I will here only touch upon, being about to add ſome below (*a*), were kill'd by arſenic. For that diſſected by Tyſon (*b*) had a foramen in the ſtomach, which was neither very ſmall, nor regular. And the fundus of this viſcus was, in an old woman, examin'd by Maurice Hoffman (*c*), found to be ulcerated, as it were, ſphacelated, and black.

So alſo, in another woman deſcrib'd by Wolffius (*d*), already quoted, it was found to be quite eroded; and not without a very violent inflammation of the pylorus, which inclin'd to a ſphacelus. And in a man whom the celebrated Henckel (*e*) open'd, were ſpots of a conſiderable ſize, either of a yellow colour degenerating into brown, or reddiſh, extending themſelves towards the pylorus; and, moreover, two angular foramina of the villous coat: one towards the pylorus, and the other near the œſophagus.

This man had been carried off, in a ſhort ſpace of time, by very violent heart-burnings, heats, great pains, faintings, and vomitings. And that woman was ſeiz'd with great anxieties of the præcordia, and with vehement, and, at the ſame time, continual vomitings and ſtools; and, finally, with convulſive motions; whereby her limbs were miſerably diſtorted: ſo that ſhe died within ten hours, or leſs, amidſt the moſt violent tortures. And that you may not have any room to doubt from whence all theſe ſymptoms had their origin; in the ſtomach of both of them was found arſenic.

6. Thus far I have taken notice of the ſymptoms which are the conſequences of taking arſenic, in particular; as I could gather them from hiſtories that are extant, either in the Sepulchretum, or in other authors, whoſe obſervations might be added thereto: and though this reviewal has, probably, been more prolix than you would wiſh, yet it, perhaps, has not been altogether uſeleſs.

Now I ſhall tell you what I have ſeen myſelf at two different times; firſt in one perſon, and in the ſecond place in three: all of whom I ſuppos'd to be affected with this poiſon, when I well weigh'd and conſider'd all the circumſtances that I could find out by enquiry afterwards.

The firſt was a man of a robuſt and large body, and of a pretty full habit, whom, having been ſeiz'd with a fever, I had now almoſt cur'd; the fever being ſo much remitted, that he ſometimes roſe from his bed. This man; within leſs than half an hour after his ſupper, wherein he had taken nothing but ſome bits of bread boil'd in broth; was ſeiz'd with a very troubleſome vomiting: and the more ſo becauſe it very frequently return'd.

At an unſeaſonable hour of the night, one of his domeſtics came to me,

(*a*) N. 9. & 21.
(*b*) Act. Lipſ. Supplem. Tom. 3. S. 4.
(*c*) In cit. Append. Obſ. 35.
(*d*) Cit. Obſ. 29.
(*e*) Act. N. C. Tom. 2. Obſ. 155.

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telling me the caſe, and begging to know what was neceſſary to be done. Suppoſing the uneaſineſs to be increas'd from thence, that the patient was oblig'd to vomit with an empty ſtomach, I order'd broth to be given him; and if the vomiting, nevertheleſs, continu'd to be troubleſome, deſir'd that a glyſter ſhould be given to take it off.

All this being of no effect, he return'd; and I order'd other things; among which was, at length, one grain of purified opium; ſaying, that if this had no effect, I myſelf would come. The opium alſo being thrown up in a quarter of an hour, I aroſe, and went to the patient together with the ſervant.

As I was going along; being ſurpriz'd that ſo violent a vomiting ſhould come on ſuddenly, and continue ſo long without a manifeſt cauſe; I aſk'd the ſervant whether the patient had been guilty of any irregularity, and whether he had taken more or leſs of any thing at his ſupper than had been already ſaid. The ſervant ſaying that nothing had been taken beſides that bread boil'd in broth; "Nay, ſays he, and that powder which you order'd was ſprinkled upon it by N."

I, however, who had order'd no powder to be ſprinkled upon it, and was not ignorant what might be the intention of this perſon who had ſprinkled the powder, thought to myſelf, without taking any notice to the ſervant, what I muſt immediately do; how far I muſt conceal what I had learn'd; and what I was to beware of hereafter, and in what manner.

And now I had come to the patient, who complain'd, miſerably, not ſo much of a vomiting, as of an inexplicable kind of writhing pain at the ſcrobiculus cordis, as it is call'd; and implor'd aſſiſtance as ſoon as poſſible. There was no tenſion in that part, or in the remaining region of the ſtomach; nor any pain. But a ſingultus troubled him very frequently; being attended with eructations, and often with a kind of difficulty of breathing. His pulſe was very frequent; but rather weak and ſmall.

Be of good courage, ſaid I; you ſee how much deprav'd and vitiated humour you have thrown up (and a great quantity, indeed, there was; the viſcid phlegm, wherewith he abounded, ſwimming at top; and at the bottom was the bread which he had taken: nor had he thrown this up at firſt, but ſome hours after); you muſt now be recruited with a very mild and good fluid: and I immediately gave him a large glaſs of cow's milk, which I got as ſoon as poſſible.

No ſooner had he drunk it, but he cried out that I had given him new life. And, indeed, all his ſymptoms became better: ſo that his pulſe return'd, within two hours, to its natural magnitude and ſtrength; the pain grew more mild; and the vomiting return'd no more; not even on provoking it by means of art.

But by giving the milk in repeated doſes, and in greater quantity than before; ſo that it might be thrown up by the mouth, if the ſtomach was ſo inclin'd; or that it might ſheath over, and waſh the inteſtines; I obtain'd this ſecond point, by looſening the belly: the pulſe being, at the ſame time, become leſs frequent; and the difficulty of breathing, and ſingultus, (both of which ſymptoms were now obſerv'd leſs frequently) being remov'd to ſuch a degree, as to be obſerv'd but once or twice on the following days;

puddings,

puddings, alſo, prepar'd from barley, or rice, together with milk, were given.

And as much whey as he choſe was given him to drink; for as the inteſtinal diſcharges came on, the thirſt and heat grew greater, both which were reliev'd by drinking a quantity of whey. Whey alſo, or milk, injected by way of glyſter, ſooth'd the ſenſe of heat wherewith the rectum and anus began to be troubled.

Not to make the hiſtory too long; within two or three days, all the ſymptoms that had been the conſequences of this poiſonous powder, were driven away: nor did the man, as long as he liv'd; and he liv'd many years afterwards; find any remaining marks of injury in the ſtomach or inteſtines.

Thus the viſcid humours wherewith this man, as I have ſaid, abounded; and the ſpeedy and frequently-repeated vomitings; and, finally, the milk and ſerum, by the quantity of which, whatever of poiſon, or its effects, remain'd in the ſtomach or inteſtines, was entangled, diluted, waſh'd off, and carried out by the inteſtines; ſav'd him from the threaten'd and imminent deſtruction.

I might now openly declare by what means I took care that this powder, which I afterwards underſtood to be white, ſhould not be again given to the patient; for it is long ſince that the perſons have been dead; and at the ſame time ſhew in how much danger a phyſician may frequently be, unleſs he diſſembles his knowledge of ſome things: and in how much danger the patient may be, whether he hears certain things from the phyſician or not; and yet in what manner I prevented new ſnares being laid for the patient's life: and, at the ſame time, eſcap'd the revenge of a wicked man, who would have been greatly irritated, if he had perceiv'd that his deſigns were obviated by my endeavours.

But it is better to paſs over to thoſe things which I have ſeen in three other perſons, in whom the ſame conjecture, but not the ſame diſſimulation, was neceſſary.

7. In the month of May of the following year, which was 1711, that excellent prieſt Franceſco Balducci was returning home from a ſacred peregrination, when he ſtopp'd a little while at Ceſena, juſt that he, and the three others with him; who were, as well as himſelf, in the prime of life, and in very good health; might dine frugally and without delay.

Theſe perſons were his own brother's wife, another woman, and a man. Soon after dinner they went out from the inn, and continu'd their journey. But they had not gone far before the prieſt was ſeiz'd with ſo great a pain in his belly, that he was under a neceſſity of being taken from his horſe.

When he was taken off, he diſcharg'd a great quantity of matter, both by vomiting and by ſtool; and yet this pain, join'd with an inexplicable *angor*, or writhing pain and anxiety, increas'd to ſuch a degree, that he ſeem'd to be giving up the ghoſt. Being carried back to Ceſena, he was ſuppos'd by the phyſician, to be affected only with a colic pain; becauſe the ſeat of the diſorder was in the right epicolic region. Through the whole of that day, therefore, and a great part of the night, he applied as many glyſters, fomentations, potions, and boluſſes, both of an anodyne and purging nature, as

any other phyſician would have preſcrib'd within many days; but all were to no purpoſe.

And although this phyſician ſaw one of the women, in the mean while, ſeiz'd with vomitings and purgings; and, moreover, with ſwoonings; and heard the man complaining of a heat and weight in his ſtomach; ſtill he did not ſuſpect any thing of poiſon; I ſuppoſe, becauſe the other woman, who had din'd at the table with them, had not found the leaſt bad ſymptom; and the maſter of the inn, alſo, very firmly aſſerted that there could be nothing hurtful in that dinner; and becauſe the man, who had of his own accord taken theriaca, found the heat of his ſtomach greatly increas'd therefrom.

He himſelf preſcrib'd an anodyne emulſion for the woman who was diſorder'd. But both this woman and the prieſt were reliev'd by the diſeaſe itſelf; by the force whereof a great quantity of matter continu'd to be diſcharg'd from the ſtomach and inteſtines. And theſe diſcharges being diminiſh'd about the morning, they all went together in a carriage to Forli, immediately ſent for me, and related every thing that had happen'd.

Upon hearing the relation, I inſtantly enquir'd whether there was any diſh in the dinner whereof the woman, who had not been affected, had eaten nothing: and when I heard that there was, (to wit, a pudding made of rice, which was brought firſt of all in a large diſh) I ſaid that there muſt, then, be poiſon in that pudding. And ſo we ſhould believe, ſaid they, if they who ate the moſt of it had been the moſt affected; and they who ate only little, the leaſt: but the caſe is quite otherwiſe; for this prieſt, who ate the leaſt of that diſh, as he did of all the others, has been, and is, the moſt violently affected: the woman, who ate ſomething more than he, has been leſs violently affected: and the man, who ate a great quantity, was, and is, diſorder'd in the leaſt degree of any.

But was not, ſaid I, ſome ſcrap'd cheeſe ſprinkled over this pudding, as there generally is? When they anſwer'd that there was; and that the prieſt, having no appetite, had taken ſcarcely any thing except that cheeſe; but that the woman had eaten much more of the rice than of the cheeſe; and, finally, that the man had ſcarcely taken any cheeſe, but a great quantity of rice; You yourſelves, ſaid I, perceive plainly, without any hint of mine, that there was a corroſive poiſon in the cheeſe; perhaps, mix'd therewith in order to deſtroy mice; and that this cheeſe, not having been laid aſide, (as it ought to have been with the utmoſt caution) ſomebody, who was ignorant of ſuch a mixture, had ſprinkled it upon the pudding, at the time when the ſervants of the inn were in a hurry to prepare your dinner.

I ſeem'd at that time to have conjectur'd juſtly; and ſtill more, when, a long time after, the innkeeper; having heard that theſe perſons had eſcap'd the danger; being leſs fearful on his own account, made no ſcruple to whiſper ſomething privately. Nevertheleſs, after clearing up the caſe thus far, two occaſions of doubt ſeem'd ſtill to remain: one, that in eating they had perceiv'd a certain odour of not a very agreeable nature; I ſuppoſe, from the bad cheeſe; but no unuſual taſte, and no ſenſe of eroſion afterwards, either upon the tongue or upon the fauces: the other, that although

I ſup-

I ſuppos'd the poiſon to have been corroſive, it was not certain which of the corroſive poiſons it was, ſo that any peculiar antidote might be oppos'd thereto.

But in the preceding caſe (*f*), alſo, there might have been the ſame occaſions of doubt. For neither in that caſe, as you may ſafely argue from my ſilence, was there any mark of eroſion upon the tongue, or in the fauces; nor did I know what poiſon, in particular, had been given: and yet my conjecture of corroſive poiſon was confirm'd by the great advantage wherewith milk and whey had been given; and it was at the ſame time ſhewn thereby, that where the ſpecies of poiſon is unknown, and you cannot apply its proper remedy; you muſt, at leaſt, make uſe of that which is oppoſite to the genus thereof, which is leſs unknown.

I ſhould have done the ſame thing in this caſe as in the former, if a greater number of diſcharges by vomiting and ſtool, which had preceded, but were now entirely remov'd, and the vaniſhing of the *angor* and tormina, had not already ſeem'd to prove the poiſon to have been evacuated. Yet, in order to obviate the effects of any that might happen as yet to remain; and, at the ſame time, that the thirſt and the fever, which had follow'd ſo great a quantity of evacuations, and ſo violent a commotion of nature, might be allay'd; I preſcrib'd a large quantity of whey to be drunk by the prieſt and the woman.

For as to the man; who was neither thirſty nor feveriſh, nor aſk'd any thing elſe of me than that I would remove the ſenſe of weight whereby his ſtomach was oppreſs'd; I aſſented to his petition, by giving him oil of almonds, with this intention, that I might rather excite vomitings than ſtools; and that with a remedy of ſuch a nature, as, if any eroding particles ſtill remain'd in the ſtomach or inteſtines, might be of uſe by entangling, and, at the ſame time, ſheathing them.

However, as vomitings could not be excited, even by thruſting the fingers into the fauces as far as poſſible; the inteſtines were made lax, and the ſenſe of weight was entirely remov'd. And as he was very well after this, I recommended to him nothing but puddings made of rice and milk.

Theſe I gave to the others alſo by way of ſupper; when I had already obſerv'd the fever and the thirſt to have grown very ſlight, by large draughts of whey. They had a very good night; ſo that the woman, on the following day, was quite free from fever, or any other ſymptom; and the prieſt, whoſe fever and thirſt decreas'd gradually more and more, had nothing now remaining to complain of beſides theſe: for the ſenſe of heat which he had felt the day before in diſcharging his urine, was now quite remov'd.

And though through the whole of that day, and the following night, and a great part of the next day, every thing continu'd to grow better; and the inteſtinal diſcharges were free and eaſy, and unattended by any ſenſe of heat; I did not, however, omit to give the ſame things that I had given for two days before.

8. But, behold! on the beginning of the fourth day from the time that

(*f*) N. 6.

the prieſt had been ſeiz'd with that very violent pain, at the ſame hour in the afternoon, and without any previous manifeſt cauſe, he was ſeiz'd again with it in the ſame manner. His feet were cold in the beginning; his pulſe was ſomewhat contracted. Beſides the pain, there was a certain inexplicable anguiſh in the whole belly; whereby the patient complain'd that there was a great interception to his breath, and that by this chiefly he was oblig'd to writhe himſelf here and there, in a miſerable manner, ſometimes to riſe and ſometimes to walk.

But the pain occupied the right epicolic region, and the neighbouring part of the loins, ſometimes extending itſelf from thence tranſverſely, through the hypogaſtrium; at one time into the right ſide of the ſcrotum, and at others into the neighbouring thigh: ſo that it might ſeem to be nephritic.

But the man had not ever been ſubject to this nephritic pain: and that the pain, extremely ſimilar to the preſent, if you except the vomitings and the ſtools, wherewith he had been attack'd four days before, had not been nephritic, not only that proximate preceding cauſe which I have ſpoken of above, but the violent effects thereof upon his companions, at the ſame time, evidently ſhew'd: and, finally, the urine being nothing chang'd, but perfectly ſimilar to that of a healthy perſon, contrary to what is uſual in nephritic patients, join'd to prove that the pain was not of that kind.

However, as none of thoſe things which I had order'd to be applied externally were of any ſervice; and the patient aſſerted, that he could not bear the application of glyſters, for this reaſon, that a tumour of the hæmorrhoids, and a very great pain, had come on at the ſame time, together with a teneſmus; ſo that, if this pain ſhould be exacerbated by the introduction of a pipe, he could not be capable of ſupporting himſelf under it; the urgent neceſſity of relaxing, and the ſimilitude of the nephritic pain, impell'd me to try a remedy which is uſeful in this pain; I mean, a warm and emollient bath.

Nor did my expectation deceive me. For ſcarcely had the patient ſat down in the bath, when firſt the *angor*, and a little afterwards the pain, remitted. But upon his coming out of the bath, and being again attack'd therewith; I was oblig'd to procure him a little ſleep, and by that means to refreſh him. By taking one grain of purified opium, therefore, he ſlept an hour.

Being awak'd, and finding himſelf ſomewhat leſs troubled with his pain, ſo that he could now take ſome food; I gave him a ptiſan of fat broth: after taking which he ſlept the remaining part of the night.

On the day following, the patient being feveriſh, but having no pain in his belly, I gave him oil of almonds, and, at a certain hour, a clyſter of milk and mucilages: and leſt this glyſter ſhould be obſtructed by the pain of the piles, though this was now become leſs, a very ſmall tent was previouſly introduc'd into the rectum, ſmear'd over with the fat of frogs; as this fat, according to the obſervation of a phyſician who was my friend, was proper to aſſuage the pains of thoſe veins; and when the tent was taken out, the glyſter-pipe, in order to make it leſs troubleſome, was cover'd over with the inverted gut of a young chicken, and by this means ſlowly and gradually introduc'd.

The

The glyſter being injected, and he having retain'd it for an hour or more, he got ſome relief from a kind of *angor*, which was even then ſtill remaining in the belly; and from his thirſt. Againſt which, and the bitterneſs of the mouth, a great quantity of the water of Nocera, being drunk, was profitable.

After this time every thing grew better and better continually. And the woman obtain'd relief, alſo, from almoſt the ſame medicines, when yellow, but at the ſame time uſeful ſtools were now and then troubleſome; by bringing with them a thirſt, and certain ſlight and wandering pains of the belly, together with a teneſmus, which was attended by a ſenſe of heat.

Nor was the prieſt free from yellow ſtools, but leſs fluid than in the other caſe; and attended with no inconvenience, but that of bringing on the pain of the piles. In theſe ſtools were quantities of mucus, which, being once compacted into a globular figure, and attentively examin'd by me, ſeem'd to reſemble a kind of indigeſted fat, wherewith a ſort of tendinous ſubſtance was mix'd.

This globular body was diſcharg'd on the fourth day after the relapſe, together with ſolid excrements tinctur'd with blood; this blood not being mix'd with its ſubſtance, but only ſprinkled upon the ſurface: ſo that you might perceive it to be from the piles.

Thus theſe two, alſo, recovering within eleven days from that almoſt fatal dinner, liv'd many years after, without any mark of injury being left in the ſtomach, or in the inteſtines. And, indeed, the prieſt was carried off by no other diſorder than an aneuriſm of the aorta, within the thorax; which, beginning ſix years after, he bore for a long time, even to the utmoſt extremity that was poſſible.

9. Now, to begin from what was ſaid laſt, and remark ſomething, by way of addition to the other circumſtances that were obſerv'd in the four patients in queſtion; if you happen to find Paawius giving his opinion, in this tenth ſection of the Sepulchretum (*g*), that the ſigns of poiſon having been given, were a very great dilatation of the right ventricle of the heart, and of the neighbouring vena cava; and the blood concreted in the heart, and all the veins, as he imagin'd, in the living body, and by the force of the moſt cold poiſon; as if it had not been at ſeven hours after death that he diſſected the body; do not ſuppoſe that the aneuriſm of this prieſt is to be conſider'd as a confirmation of his opinion.

For dilatations of that kind are not ſo ſoon brought about as he ſeems to imagine; and, certainly, in our patient, the ſigns of an incipient aneuriſm did not ſhew themſelves till many years after, as I have already ſaid; ſo that, if you ſuſpect it to have had its firſt origin from the conſtrictions which happen'd at the time of the pain and *angor*; yet you cannot contend, that this is to be conſider'd as a ſymptom of poiſon, which others may ſuppoſe to have been brought on by ſo many other cauſes, and at ſo long an interval of time.

But as to what relates to the blood being coagulated both in the veins and the heart itſelf; I have frequently related this appearance to you, as having

(*g*) Obſ. 4. § 1.

been

been ſeen in bodies that had been kill'd by cauſes far different from poiſon: ſo that, if it happen'd from the blood being concreted within, as it is conjectur'd in the ſubjected ſcholium, that the heart of Germanicus (*b*) could not be burnt; a great number of hearts of other perſons, alſo, in whom there could be no ſuſpicion of poiſon, would be incapable of being conſum'd by fire.

And what if you add to that which is here ſaid, the opinion of the very ingenious Mead (*i*)? that poiſons act chiefly upon the nerves, and not upon the blood; which opinion alſo ſeems to be conſonant to that of Harderus (*k*): and, indeed, in regard to ſome poiſons, this cannot be denied; as, for inſtance, thoſe that kill inſtantly; ſuch as Vibulenus Agrippa (*l*) "drew from "his boſom in the very ſenate-houſe" (not from his *ring*, as Baccius (*m*) aſſerts, who had ſome other perſons in his mind at that time, as I ſuppoſe (*n*)); "a poiſon, whereby he fell down and died ſo ſoon, that he "could not be carried away into priſon, even by the haſty hands of the "lictors, before his eyes were clos'd in death, the halter being applied "to his throat in vain;" or ſuch as Locuſta (*o*) prepar'd by the command of Nero, "very ſpeedy and inſtantaneous" in its effects: whereby not only a little pig "was ſtruck inſtantly dead," but even Britannicus "fell down at "the firſt taſte:" for the virus (*p*) "ſo pervaded all his limbs, that his voice "and his breath were equally and inſtantly taken from him."

And to Mead himſelf (*q*) none ſeem'd more proper to confirm his opinion, than that poiſon which he ſays, from the experiments of Nichols, had kill'd a dog in its very paſſage through the œſophagus, "in leſs than half a mi-"nute in all;" and even when injected into the extremity of the inteſtine, did the ſame thing in a moment, without leaving any marks of inflammation or eroſion behind: ſo that we need be leſs ſurpriz'd at thoſe things I have remark'd above (*r*), of the rabbet from Sproegelius, or of the girl from the ſon of Etmuller; as both of them explain the caſe in the ſame manner, for this reaſon.

Yet as, while poiſons affect the nerves, it happens that the motion of the blood becomes "various, or is intercepted;" to uſe the words of Wepfer (*s*); or that "the circulation is at one time impeded, and at another "time very confus'd;" it will happen, alſo, that the blood is found to be in a different ſtate in different bodies.

Mead (*t*), therefore, ſuppoſes it to happen, that, if by an univerſal palſy brought on by poiſon, the circulation be ſuddenly ſuppreſs'd, the blood continues perfectly fluid in the veſſels, the ſecretions being at other times (*u*), as in a diſturb'd circulation, interrupted; and when the ſmall veſſels are ob-

(*b*) Sueton. de duodec. Cæſarib. l. 4. c. 1.
(*i*) Tract. de Venen. paſſim.
(*k*) Sepulchr. S. cit. in Schol. ad Obſ. 17. Additam.
(*l*) Tacit. Annal. l. 5.
(*m*) De Venenis ubi de venenor. ingeſt. fævitia.
(*n*) Vid. Plin. Nat. Hiſt. l. 33. c. 1. & Annot. Dalecamp.
(*o*) Sueton. l. 6. c. 33.
(*p*) Tacit. Annal. l. 13.
(*q*) Tract. cit. in Append. Tentam. 5.
(*r*) N. 5.
(*s*) Sepulchr. ibid. in Schol. ad Obſ. 3.
(*t*) Append. cit.
(*u*) Introduct. in fin.

ſtructed

ſtructed by ſtagnation, (all which circumſtances happen by reaſon of the nerves being affected) that the blood itſelf is variouſly chang'd; in conſequence of its being a humour compos'd of divers other humours mix'd together, and liable to any changes whatever, from a change of its motion alone.

But theſe changes of the blood, beſides that they are neither the firſt, nor the proper, effects of taking poiſon, may be far different in different bodies; according to the various affection of the nerves: and not only this, but according to the various diſpoſition of the blood.

Therefore, not to quit the conſideration of arſenic, the woman who died from taking that poiſon, as you have read above (*x*), had her blood fluid, and of a bright red colour; but the dog, which was kill'd by the ſame poiſon, as I related juſt now (*y*), had his blood black and grumous. And I remember that; when I diſſected nine rats, of the larger ſize, which had been kill'd by poiſon, and ſent me by a friend; I ſaw, in every-one of them, both the auricles of the heart diſtended with black blood: but not coagulated; nor, as in living bodies, very fluid.

Yet becauſe I diſſected thoſe little animals, not to ſee what were the effects of the poiſon, but in order to be better acquainted with ſome things relative to the natural ſtructure; I have nothing to obſerve here in relation to the preſent queſtion; except that the ſtomach was very full in all of them, and not, as far as appear'd externally, inflam'd in any one, and much leſs perforated: and both theſe aſſertions will hold good of the inteſtines alſo.

Nor does Heydius (*z*) ſay, that in two rats, after having taken the ſame poiſon, the ſtomach, which was fill'd with ſlime and bread, was inflam'd or eroded. But this he ſays, that when he diſſected one of them after death; for the other he had open'd when alive; "no blood flow'd out of the veſ-"ſels: and even that from the ventricles of the heart, upon cutting off the "apex thereof, not a drop of cruor diſtill'd:" but whether this was becauſe it had been confin'd in other veſſels or reſervoirs, or becauſe it was coagulated, is uncertain; as he does not add a word upon this ſubject.

On the other hand, it is certain from the experiments of the moſt excellent Ellerus (*a*), that when with blood newly drawn, he had mix'd a third or fourth part of the ſolution of arſenic, the blood was immediately thicken'd; though its globules, if examin'd by the microſcope, were greatly extenuated, diſſolv'd, and driven into motion as it were: among which globules appear'd, here and there, ſmall triangular chryſtals, that reſembled the cutting points of arrows; ſo that from all theſe things he conceiv'd, that very ſtrong corroſive poiſons, of this kind, act by deſtroying, not ſo much the fluid, as the ſolid parts of our body.

But he was not ignorant likewiſe, that arſenic, when taken into the ſtomach, was not ſo immediately mix'd with the blood; and you, in fact, ſee that it cannot be mix'd in that proportion. It will be better, therefore, to return from drawn blood to the living body; and from dogs and rats to

(*x*) n. 3. (*y*) n. 4.
(*z*) Obſ. Medic. 48.
(*a*) Hiſt. de l'Acad. R. des Sc. de Berlin A. 1752. Claſſ. Philoſ. Experim.

human

human bodies; and I will produce the appearances which Ruyſch (*b*) found, from arſenic having been taken in.

He ſometimes inſpected carcaſes of that kind: and contrary to thoſe who "think, that, in ſuch a caſe, the blood only is coagulated," he never found it coagulated, but the ſtomach ulcerated; if there had been time enough for it; as in a woman, a great part of whoſe ſtomach he preſerv'd in ſpirits: to the internal coat of which, that was in various places affected with ulcers, white arſenic "adher'd." But if it had happen'd that they died ſooner, then he ſaw bloody points, lying at a diſtance here and there, through the ſtomach.

10. From theſe obſervations of Ruyſch, join'd with thoſe that are mention'd above (*c*), it is very clearly perceiv'd, that the firſt and proper effect of arſenic, when taken into the body, or of other corroding poiſons of this kind, is exerted on the internal coats of the alimentary canal; eſpecially of the ſtomach, wherein they firſt harbour: the nerves of theſe coats being irritated, and the coats themſelves being prick'd; and if time be given, inflam'd, ulcerated, and pierc'd through.

In misfortunes of this kind, therefore, nothing can happen more deſirably, than that the ſtomach may ſoon throw up what it had taken in; or at leaſt as ſoon as poſſible: and from hence it has chiefly happen'd, that they who have been attended by me, in theſe caſes (*d*), eſcap'd.

And it happen'd ſtill much more happily to a certain gentleman, that; when, inſtead of cream of tartar, he had taken two drachms of emetic tartar; by ſome vomitings which follow'd thereon, not unattended with ſtrictures upon the præcordia, he was immediately freed from all inconveniences of the ſtomach: the celebrated Dethardingius (*e*) ſuppoſing, that no ſooner had ſome moleculæ of this medicine been diſſolv'd, and ſtimulated the ſtomach to contraction, but, without giving time for the diſſolution of the remaining particles, the whole of it; which otherwiſe muſt certainly have kill'd the man by its great quantity; was thrown up by vomiting.

But there are ſome who are by nature leſs prone to vomit. There are ſome alſo, in whom, after accidents of this kind, the fibres of the left orifice of the ſtomach and œſophagus are ſo ſtrain'd into ſtrong action, as to reſiſt the fibres, which contract themſelves, in the other part of the ſtomach: nor does it always follow, that, if any thing be then given, or forc'd down into the ſtomach, theſe reſiſting fibres, as Wepfer (*f*) teaches, are relax'd; for there are caſes wherein the man then ſwallows, and yet is troubled with a fruitleſs effort towards diſcharging the contents of his ſtomach at the ſame time (*g*).

And even thoſe who do not vomit ſoon, are ſometimes leſs in danger; as, for inſtance, if they take the poiſon upon a full ſtomach. Baccius (*h*) therefore adviſes, that, when we cannot avoid a banquet, which we ſuſpect, we neither come thirſty, nor hungry; but full of milk, and fat and viſcid foods,

(*b*) Theſ. Anat. 8. n. 70.
(*c*) n. 3. 4. 5. (*d*) n. 6. 7.
(*e*) Eph. N. C. Cent. 9. Obſ. 74. cum Schol.
(*f*) Scholio cit. ſupra ad n. 9.
(*g*) Sect. hac Sepulchr. Obſ. 4. § 6.
(*h*) De Venen. ubi de Particulari Præſerv. n. 1.

that we have previouſly taken. For he had ſeen (*i*), that, from the ſame poiſonous food, which had been eaten by a whole family, the maſter alone died on that very day; as he had eaten upon an empty ſtomach; the others, who had eaten on a full ſtomach, being ſav'd.

And though this circumſtance does not always defend from poiſon, yet it very frequently retards the pernicious effects of it; as you have ſeen in the woman with whoſe caſe this letter began: and to the ſenators of Capua alſo, who were about twenty-eight in number, death happen'd very late, for this reaſon, that they had taken the poiſon when fill'd with food and wine; and, by this means, "had made the force of the poiſon leſs efficacious in bring-"ing on a ſpeedy death," as Livy (*k*) has tranſmitted down to memory in his hiſtories.

So if a little poiſon be ſwallow'd down into an empty ſtomach, together with a great quantity of food, it is not ſurprizing, if the danger become leſs. For, by theſe means, either the poiſon is kept at a diſtance from the coats of the ſtomach, or is ſheath'd over, and obtunded, by a great quantity of matter being mix'd with it. And in this manner may be explain'd moſt of the things that have been ſaid above by us. I ſay moſt of them; for ſome of them are certainly more difficult: and this in particular, why the prieſt (*l*) was not ſeiz'd with pains in the region of the ſtomach, but in the right epicolic region.

Yet if this had happen'd only on the fourth day, it might then be conjectur'd that ſome particles of the poiſon, and particularly thoſe retain'd in the cells of the inteſtine colon, had vellicated and prick'd the coats thereof. But that it ſhould happen ſo ſoon after taking the poiſon; unleſs you ſuppoſe the ſtomach to have been ſomewhat more to the right ſide; as it, in fact, is in ſome bodies; or becauſe this is very rare, the inteſtine duodenum to have been ſomewhat more to the right ſide, or ſomething elſe of a ſimilar nature, you will not eaſily account for and explain.

11. However, that it never came into my mind to make uſe of the theriaca, or other antidotes of that kind, in the cure of patients who have taken poiſon, I know you will not be ſurpriz'd. For why ſhould I, when it was pretty clear that the poiſon was of an eroding nature, add fuel to the fire, and ſtill more ſtir it up; or at leaſt encreaſe its effects?

And indeed, I ſaw that when one of the four that I cur'd, had taken theriaca of his own accord (*m*), the heat of his ſtomach was encreas'd: for which reaſon I am leſs ſurpriz'd that the boy, taken notice of in the Sepulchretum (*n*), who had theriaca given him twice, ſhould have died within four hours after taking arſenic: and if Jo. Faber (*o*) had given nothing but mithridate to the young man who had us'd the powder of *riſagallum*, or orpiment, inſtead of cinnamon, he certainly would not have ſav'd him.

But he did ſave him, becauſe he gave him fat broths at the ſame time, and a great quantity of milk.

(*i*) Ibid. ubi Venena quibus modis fieri poſſint irrita. n. 10.
(*k*) Hiſtoriar. l. 26.
(*l*) ſupra, n. 7. 8.
(*m*) n. 7.
(*n*) Sect. hac in Addit. Obſ. 13. Hiſt. 7.
(*o*) Ibid. Hiſt. 12.

So I, alſo, ſuppoſe a boy and two girls, who were in great danger from having taken arſenic, to have been ſav'd by Jo. Jod. Cyſatus (*p*), not becauſe he had given the *electuarium Orvietanum*, but becauſe he had given milk frequently before; and becauſe nature had previouſly aſſiſted them all by ſpeedy vomitings.

For alexipharmac remedies of this kind cannot entangle the eroding particles; nor can ſo envelope and cover them over, as to prevent them from inflaming and ulcerating by their aſperities: nor yet can they ſooth and cleanſe the ulcerated parts: but, on the contrary, they muſt add new motion and power to theſe corroſive particles; and to the ulcerated parts, new heat and inflammation.

Whereas it is evident, on the other hand, that milk, oil, and other ſomewhat viſcid ſubſtances, whey, and even water itſelf, by entangling ſome, by diluting others, of theſe particles; and, in fine, by ſoothing and cleanſing the parts as much as poſſible; muſt ſtrongly counteract the tendency thereof: eſpecially if they be given in ſuch a quantity as to aſſiſt the vomitings; and, if any poiſonous quality remains after theſe, be continu'd ſo as to dilute and obtund its noxious energy.

And, indeed, although the ancients propos'd ſome things that are leſs ſuitable; Ardoynus (*q*), nevertheleſs, ſufficiently ſhews how much they eſteem'd thoſe remedies we juſt now mention'd. But the more modern phyſicians; omitting the uſeleſs and the noxious applications; have approv'd of the others, when occaſion has offer'd: ſome in their writings, and ſome even in the obſervations of others that they have collected.

Thus, in regard to milk, beſides thoſe that I have referr'd to above (*r*), many other obſervations are extant; among which is one, in particular, that Henry Doorſchodt (*s*) ſays he had taken from Hoffmann: that is to ſay, an obſervation of ten young men being taken ill in a ſhort time after eating water-gruel, wherein rather more than two ounces of arſenic had been mix'd with as many ounces of ſugar; who were, nevertheleſs, ſav'd by means of milk being given to drink, for ſo long a time, till all the efforts to vomit ceas'd: and it was neceſſary to give this remedy in ſo great a quantity, "that ſcarcely ten meaſures of milk were ſufficient for each perſon."

Thus, to ſpeak of oily remedies, (and oil of almonds, indeed, was given to theſe alſo, as well as to many others) what the moderns, as well as the ancients, thought of them, you will find propos'd by that celebrated man John Gentilis (*t*).

And in regard to aqueous remedies; among which is whey, and water itſelf; turn to a diſputation in Etmuller, which is entitled, "The ſmall be-"ginnings of great diſeaſes." Therein you will have an example (*u*) of a man who, having by miſtake drunk that fluid which is call'd *aqua fortis*, was prevented from receiving any injury by drinking a large quantity of water ſoon after. To which add another from Sydenham (*x*); who, by means of

(*p*) Ibid. Hiſt. 2. & ſeq.
(*q*) De Venen. l. 2. c. 1, 2, 3. 5. ubi de Curat.
(*r*) N. 5.
(*s*) Diſſert. de Lacte in Corollar.
(*t*) Annotaz. alla pag. 64. v. 5. della Lett. Filoſ.
(*u*) § 47.
(*x*) Epiſt. Reſponſ. I. verſ. fin.

this

this remedy alone, given copiouſly by the mouth, and injected by the rectum, ſav'd a man " who had taken down a very conſiderable quantity of corroſive " ſublimate mercury."

And Boerhaave (*y*); where he propoſes ſuch things as he thinks it neceſſary to apply where the ſpecies of the poiſon taken in is unknown; not only commends that cure of Sydenham's, but alſo recommends moſt of the remedies that we have mention'd above, and made uſe of in thoſe patients; not even the bath and opium, finally, being omitted: and he ſhews how far the latter of theſe remedies may be uſeful.

The other remedies are not omitted in that part of Etmuller's works which I juſt now referr'd you to; and how far theſe have been advantageous when the poiſon was leſs known, the obſervation of Screta, in the Sepulchretum (*z*), demonſtrates.

Yet when its ſpecies is known; how much more advantageous it may be to make uſe of the remedies that are peculiarly oppoſite thereto, you will learn from two hiſtories that are pretty ſimilar in moſt reſpects, except in their event; the one in the ſame place (*a*), the other in the works of the celebrated Mead (*b*); if you will compare them one with another.

However, I ſhould here admoniſh you, if you were not capable of obſerving yourſelf, how different ſymptoms aroſe in thoſe three perſons whom I had under my care at the ſame time (*c*); though from one and the ſame poiſon. But of minerals enough; as you have alſo heard, on a former occaſion (*d*), what miſchiefs I have ſeen from ſulphur, when taken into the ſtomach.

Now let us add a few things upon the ſubject of vegetable poiſons.

12. A poor woman, about ſixty years of age, who (whatever the cauſe of this intention might be) had attempted ſeveral times to throw herſelf into the river, having, laſt of all, gather'd a great quantity of the leaves of the *rhododaphne*; a ſhrub that, in our country, is call'd *oleandro*; and having drunk the juice expreſs'd from them together with wine; was heard, about three hours after, by the women who were in the next cabins, to vomit very violently.

They ran to her, and perceiv'd what ſhe had done: and, as ſhe was thirſty, they gave her a glaſs of water, thinking that there would be no remaining miſchief after the vomiting.

But, as they ſoon after perceiv'd her to be much worſe, they firſt ſent for the prieſts, and in the next place for our Mediavia; who happen'd not to be far off: and this was about five hours after the woman had drunk that poiſonous juice.

In her reſpiration he obſerv'd nothing that deſerv'd to be greatly taken notice of; nor in her face, if you except her lips of a brown colour, and particularly the lower lip; for the other parts were either of a natural co-

(*y*) Vid. Inſtit. § 1129. & Prælect. ad eund. §.
(*z*) Hiſt. 10. in cit. Obſ. 13.
(*a*) Hiſt. 13.
(*b*) Tract. de Venen. Tentam. 4. in fin.
(*c*) N. 7, 8.
(*d*) Epiſt. 55. n. 9. & ſeqq.

lour, or were but juſt a little inclin'd to a pallid hue: nor was her body cold, but only a little leſs than warm.

As the women who were about her ſaid that ſhe had now no power of ſpeech remaining; he cried out aloud in the patient's ear, who lay like a perſon aſleep, to ſtretch out her hand. But ſhe eaſily rais'd herſelf up to ſit; and the women, in the mean while, having ſtretch'd out one arm, ſhe ſoon after gave the other herſelf.

Her pulſe was ſmall, weak, and ſomewhat hard. Endeavouring to give an anſwer to a queſtion that was aſk'd her, ſhe made a kind of inarticulate noiſe indeed, but utter'd no diſtinct word; pointing, at the ſame time, with her finger to the matter that ſhe had vomited on the ground, which was conſiderable in its quantity. He preſcrib'd remedies to be given her to drink immediately; but in vain. For ſhe, taking ſcarcely any thing, died within four hours after he had ſeen her; ſo that ſhe did not live more than nine hours after drinking the juice I have mention'd.

The carcaſe being order'd to be diſſected on the following day, which was the ſeventeenth of November, in the year 1745, by the judge of capital matters; and Mediavia, by whom all theſe circumſtances were related to me, preſiding at the diſſection; it was firſt of all obſerv'd, that there was nowhere any lividneſs in the fore-part of the body; nor did any tumour, not even of the belly, appear: but on the back-part it was univerſally of a violet colour, from the head to the bottom of the lower extremities.

The abdomen and the cheſt being open'd ſoon after, ſome heat was perceiv'd internally, even at that time; although it was ſeventeen hours after death. Within the former cavity every part was in a natural ſtate, and a natural poſition; ſo that neither the ſtomach, nor any other viſcus, was ſwollen: for as to the tranſverſe tract of the colon being reflected downwards for the ſpace of three or four inches, and returning up again from thence; this is an appearance which, as you may have learn'd from my letters, is met with very frequently, even in thoſe perſons wherein it ſeems to have happen'd thus naturally, rather than from diſeaſe.

But when they fix'd down their eyes very attentively, they obſerv'd that the veins which paſs through the ſtomach, the omentum, and a part of the inteſtines annex'd to the meſentery, were very much diſtended.

On cutting into the ſtomach, they ſaw therein a green humour, in a ſmall quantity. This being wip'd away, no mark of diſorder was found any-where in the ſtomach: except that the rugæ, which paſs'd through the fundus longitudinally, near to the antrum pylori, were harder than they naturally are.

Nor was there any thing preternatural in the duodenum, when open'd: notwithſtanding it contain'd ſome of the ſame green humour that they had ſeen in the ſtomach: which, perhaps, was from bile that had been pour'd out, and mix'd with acid juices; although the gall-bladder was found to be moderately full: for that juice which the woman had drunk, would rather have retain'd its black colour from the wine that was mix'd therewith.

In the thorax, the right lobe of the lungs was connected to the pleura; being very red on the back-part, and ſeeming to have ſome coagulated blood,

as it were, within its ſubſtance. Yet the left lobe was not only every-where looſe and unconnected; but ſo collaps'd into itſelf, as if ſcarcely any air was left within: and it was but a little red on the back-part. In the ventricles of the heart there was not the leaſt fluid or coagulated blood. However, when the larger veſſels of the heart were cut into, a great quantity of blood flow'd out, which was neither grumous and coagulated, nor yet more fluid than natural.

The head was not touch'd.

13. I have the more willingly committed this obſervation to writing, becauſe I do not remember to have read, in any author, the diſſection of perſons kill'd by this poiſon; nor yet that the ſymptoms which enſue upon its being taken into the ſtomach, have been obſerv'd by any one of the more modern authors.

And the ancients have not all aſſerted it to be hurtful to the human body; nay, ſome of them, on the contrary, have aſſerted it to be uſeful. "The "*rhododendros*," ſays Pliny (*e*), "does not even find a Latin name amongſt "us: they call it *rhododaphne*, or *nerium*. What is ſurprizing of this ſhrub "is, that the leaves of it are a poiſon to quadrupeds; but a ſecurity to "man againſt ſerpents, when drunk in wine, with the addition of rue. For "ſheep and goats are ſaid to die, if they drink water wherein the leaves of "this ſhrub have been macerated."

And you will ſee that Dioſcorides (*f*) has written what is pretty ſimilar to this; and that neither Apuleius (*g*), nor even Lucian (*h*), whom he then almoſt copied, had taken notice of it as being pernicious to any creature but beaſts. It is certain, indeed, that the former has ſaid the flowers of this ſhrub, which were commonly call'd "laurel roſes," are "a poiſon:" but he ſays this, becauſe "it is death to all cattle to eat them."

Nay, Lucianus had even aſſerted that they were not pernicious to all thoſe animals, but only to aſſes and horſes. For thus have they faithfully render'd him into Latin: "This food is bad for every aſs and horſe; for they ſay, "that any of theſe creatures which have eaten of it, die immediately." On the contrary; to paſs over Scribonius (*i*), who ſays, with ſome conſiderable plainneſs, that he who ſhould be willing to chew the leaves of the rhododaphne as a remedy againſt the tooth-ach, muſt not ſwallow his ſpittle; Galen, at leaſt (*k*), has expreſsly taught us, that this ſhrub is not only pernicious to cattle, but to men alſo.

And all the principal of the Arabian phyſicians, whom you will find particularly quoted by Ardoynus (*l*), have propos'd remedies againſt this poiſon. And as to the ſymptoms which follow upon its being taken into the ſtomach; that are collected both by the ſame author (*m*) and by Matthiolus (*n*); they come pretty nearly to theſe: a violent ſtreightneſs ariſes, the belly ſwells, is painful, and becomes lax; an inflammation is created; and a heat of the

(*e*) Nat. Hiſt. l. 24. c. 11.
(*f*) De Med. Mat. l. 4. c. 77.
(*g*) Metamorph. l. 4. prope initium.
(*h*) In Lucio, ſive Aſino.
(*i*) Compoſ. Med. 55. cum Rhodii not.
(*k*) De Simpl. Med. facult. l. 8.
(*l*) De Venen. l. 3. c. 21.
(*m*) Ibid.
(*n*) Comment. in c. 12. l. 6. Dioſcorid.

whole

whole body, a loſs of ſenſe, a ſyncope, and death, follow after: and theſe becauſe the rhododaphne is immoderately heating; and, in like manner, incides, bites, ulcerates, and reſolves.

But as you will readily acknowledge, that ſcarcely any of theſe ſymptoms and effects were obſerv'd in the patient we have deſcrib'd, when living; or in her body after death; ſo you ſee plainly that there were other and far different appearances: for which reaſon, I doubt not, but you will wiſh with me, that whenever any one was hurt by this poiſon, whether in ancient times, or ſince, we could have the hiſtories of what had happen'd to them written; rather than the diagnoſes of many authors, who frequently copy from one another; and which ſometimes correſpond more to their own hypotheſes than to obſervations.

And as experiments have been made upon dogs from ſo many other vegetable poiſons, by Wepfer, and by others; and as the ſymptoms they ſuffer'd while living, and the appearances found in their viſcera after death, have been obſerv'd by theſe authors; ſo I could wiſh, that either the ſame thing had been done in regard to this, or that I had time to do it at preſent: I would do nothing more willingly than compare all the obſervations of this kind one with another; that we might ſee what difference we could diſtinguiſh in one from the other, in regard to the ſpecies, the temperature, the age, the country, the part of the plant, or the ſtate of it; or, finally, in regard to the fluid that was mix'd therewith.

14. Now, if we conſider this one obſervation; we ſhall think it probable that this poiſon had acted upon the ſtomach and its nerves, and, conſequently, upon others that cohere therewith. For what were the very hard rugæ of the ſtomach; what thoſe vomitings; what that bile, as it ſeem'd to be, preſs'd out; what the loſt power of ſpeech; what that kind of ſleep, as it were; what were other circumſtances that I now paſs over; but ſymptoms that lead us naturally to conjecture ſome internal convulſions and contractions, whereby the blood alſo might be ſtopp'd in its courſe, and diſtend thoſe external veins of the ſtomach and inteſtines?

Nor would I have you ſay, that, if all theſe things happen by the ſtomach being vellicated internally, the internal ſurface of the ſtomach itſelf ought to have appear'd to be more inflam'd with diſtended veſſels. For it is ſufficient that the ſtomach is ſo vellicated as to irritate its nerves, in order to explain thoſe things that I have ſpoken of; but that it ſhould be inflam'd, is by no means neceſſary.

For, to take notice, firſt, of an obſervation made on the human body; in regard to the *coriaria*, or that plant which was call'd *rhus myrtifolia monſpeliaca*, *C. B.* how ſpeedy, how repeated, how horrible, and, in a ſhort time, how fatal an epilepſy it excites, is ſhewn by that very celebrated man Des Sauvages (*o*).

Yet the ſame author could not find, by examining the body of this man after death, (who was kill'd by eating only fifteen of the berries of that plant, at moſt) any injury of the brain, or of any other part; and particularly of

(*o*) Mem. de l'Acad. R. des Sc. A. 1739.

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the ſtomach itſelf; wherein there were, even then, five berries of the coriaria; the others having been thrown up by means of an emetic, that had been given.

And to paſs on to many obſervations, and thoſe upon ſeveral brute animals of different kinds; certainly a great number of violent ſymptoms were undergone by a dog, and in like manner by a cat; the former of which was kill'd by Heydius (*p*), by giving two of the nuts call'd vomicæ; and the latter by Sproegelius (*q*), by forcing down a drachm of napellus.

Yet in the dog "the ſtomach, the œſophagus, and the inteſtines, were "quite in a natural ſtate:" and the ſtomach of the cat was "very ſimilar "to one in its moſt natural ſtate; and nothing like eroſion was ſeen: the "viſcous coat being very bright and ſmooth, and the inteſtines, together "with the other viſcera, in a very healthy ſtate."

Therefore, as Heydius had thought it to be pretty plain, from his obſervation, that the fluid, by which the brain and nerves are moiſten'd, was chiefly "infected by this poiſon;" ſo Sproegelius (*r*) has concluded as follows from his: "Since I have ſeen no ſign," ſays he, "either of eroſion, "or inflammation, in the animal killed by this poiſon, it muſt chiefly have "exerted its influence upon the nerves; by vellicating the nervous mem-"brane of the ſtomach."

And indeed, turn to the experiments of Wepfer, Brunnerus, and Nichols, made upon thoſe animals, to whom they had given ſome vegetable poiſon; and to ſome of them the ſame that Sproegelius and Heydius had given; you will read that there were violent ſymptoms in all of them; which came on ſoon after taking the poiſon: yet you will not find that the ſtomach was inflam'd in all of them.

For in one of them (*s*), "the internal ſurface of the ſtomach was white: "nor did the leaſt ſign of inflammation appear in any part." In another (*t*), "the rugæ of the ſtomach were white; and if, in ſome places, they were a "little more red than is obſerv'd at other times, they nevertheleſs were not "manifeſtly inflam'd." In a third (*u*), "no ſigns of inflammation could be "obſerv'd in the ſtomach, notwithſtanding the ſurface of the rugæ was leſs "white than it is found at other times to be." And, finally, in a fourth (*x*), the ſtomach and inteſtinum duodenum "were quite white on their inter-"nal ſurface, and free from all inflammation."

And in none of thoſe that Nichols diſſected (*y*), "was any inflammation "of the membranes to be ſeen internally;" but the veins were diſtended with fluid blood, ſuch as they were diſtended with in the cat of Sproegelius: and this I take notice of, becauſe there was not any coagulum of blood in the four animals juſt now taken notice of from the Sepulchretum; and indeed, in one of them (*z*), as well as in the woman in queſtion (*a*), "not "the leaſt quantity of blood remain'd in the ventricles of the heart."

(*p*) Obſ. Medic. 50.
(*q*) Experim. circa venena Exp. 2.
(*r*) §. 5.
(*s*) in Additam. ad Sect. hanc Sepulchr. Obſ. 5. Hiſt. 1.
(*t*) Ibid. Obſ. 6. Hiſt. 1.
(*u*) Ibid. Obſ. 7. Hiſt. 1.
(*x*) Obſ. ead. Hiſt. 5.
(*y*) apud Mead. in Append. ſupra ad n. 9. cit.
(*z*) Obſ. 5. cit. Hiſt. 1.
(*a*) n. 12.

However, the ſame appearances were not found in all theſe, as in thoſe four to whom the ſame poiſon had been given: and even in many of them was an inflammation of the ſtomach; ſo that it ought to ſeem leſs ſurprizing to you, if I ſhould, by producing two recent hiſtories, ſhow, that the ſame had exiſted in the neareſt inteſtines at leaſt, or in theſe and the ſtomach at the ſame time, from ſome one or other of the vegetable poiſons.

The pernicious effects of the berries of the ſolanum, which they call *furioſum*, have been ſeveral times obſerv'd; but never more than in a little boy, who died in a miſerable manner, in a few hours: his body being diſſected by that celebrated man Schreckius (*b*), had, among other appearances, the inteſtines jejunum, and colon, very much inflam'd.

And muſhrooms, particularly muſhrooms of that ſpecies which Vaillant has deſcrib'd thus, "the muſhroom of the middle ſize, univerſally white," did almoſt the ſame thing near Paris, as they had formerly done at Rome, while Pliny was writing his hiſtory (*c*); I mean, "kill'd a family;" but that nature, aſſiſted by the art of that experienc'd phyſician Monnier (*d*), who deſcribes all the ſymptoms accurately, and in order, out of the ſix, that had eaten them, ſav'd five.

The ſame author, in examining the body of a virgin; who was the only one that could not be ſav'd of all theſe; among many other appearances, which you will ſee in his own relation, found ſome marks of inflammation in the ſtomach, about the pylorus: and the inteſtine duodenum had the veſſels of its coats quite fill'd with blood internally; being, at the ſame time, beſides ſome ſlight excoriations, diſtinguiſh'd with purple ſpots, and inflam'd at the upper part thereof.

And I have ſeen an inflammation of the ſtomach, and inteſtines, brought on by a vegetable medicine: but one of the moſt acrid kind; and one which, for that reaſon, ſometimes brings on death as certainly as poiſon: I mean the black hellebore. The hiſtory of the caſe is as follows.

15. A man; who, if you judg'd from his countenance, did not ſeem to be fifty as yet; of a well-form'd body, ſomewhat fat, and of a good colour, though a little inclin'd to brown (having black hair and black beard) being in the hoſpital under cure, on account of a melancholic delirium, was about to depart from the hoſpital immediately, when he took the extract, as it is call'd, of black hellebore. By this medicine he was purg'd to a conſiderable degree.

But when no miſchief was expected; in the beginning of the night, that is, at the ſeventh or eighth hour from the time he had taken it, he was attack'd with vomitings, and pains of the belly. Yet theſe ſeem'd to be quieted ſoon after by drinking ſome warm broth; that is, about the ſecond hour of the night.

At the fifth hour they again came on; and ſeem'd again to be diminiſh'd; ſo that he went to bed before the ſixth hour: and he had thrown up nothing by vomiting, but as much of a green kind of matter, degenerating into black, as two or three ſpoons could have contain'd. When he lay down

(*b*) Commerc. Litter. A. 1743. Hebd. 8. n. 4.

(*c*) Nat. Hiſt. l. 22. c. 13.

(*d*) Mem. de l' Acad. R. des Sc. A. 1749.

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he ſeem'd to be quiet and eaſy; at leaſt he made no noiſe that ſhow'd him to be in pain: nor any which the patients, who lay in the neareſt beds, heard.

At the eighth hour, however, a certain ſound, which came from his mouth, was heard by the attendants: at which they running to him, found him already dead.

Theſe things being accidentally related to me; for I was at that time (it being about the middle of December, in the year 1747) teaching anatomy in the hoſpital; I firſt enquir'd what kind of extract of hellebore, and how much he had taken. And I found that it was the ſame which had been generally given to others there; I mean, an extract made from the freſh-drawn roots, bruis'd and prepar'd with ſimple water: he had taken the quantity of half a drachm; whereas, very frequently, the weight of a ſcruple was given, and ſometimes, to thoſe who are not eaſily purg'd, more than half a drachm, without any injury.

As I enquir'd, after this, whether the man had taken any thing elſe that could be hurtful; I was anſwer'd, that ſo far was this from being the caſe, that he had even done wrong by not taking every thing he ought to have taken. For the patient, to whom this extract was given, ought to drink whey after taking it: but he had not drunk his whey; as was certainly known after his death, by the whey being found in the very ſame place where it had been put for him to drink.

Having learn'd theſe particular circumſtances, relative to the caſe, I undertook the diſſection of the body, at eight-and-thirty hours after death.

The limbs of the carcaſe not being obſerv'd to be rigid, or contracted, the belly was open'd. We ſaw the ſtomach and inteſtines to be inflam'd, here and there, even on the external part: ſo that as the inteſtine ileum was, in ſome places, of a natural width, and in other places of a greater or leſſer width than natural; where it was narrower than natural, there the coats were very thin, and without any redneſs: but in other places they were ſeen to be diſtinguiſh'd with red ſtriæ.

Then the ſtomach, and all the inteſtines, being waſh'd out with water paſs'd through them, and open'd; we found the ſtomach, together with a ſmall part of the annex'd gula, to be, in part, inflam'd; but on the left ſide only, and not on the right: and the inteſtines were here and there inflam'd; yet in ſuch a manner, that the inflammation was leſs ſlight in the thin than in the thick inteſtines: if you except the rectum, wherein ſome ſpaces were equally and evidently inflam'd, as in the ſtomach. Yet no violent inflammation appear'd any where through the whole of this body.

The ſpleen was a little larger than natural: and on its flat ſurface, that is to ſay, where it was in contact with the ſtomach, of a roſy colour; and univerſally ſo lax, that the interior parts of it, when cut into, were almoſt fluid. In the liver was nothing worthy of remark, unleſs the colour of the bile; which, as was ſeen through the coats of the gall-bladder, appear'd to be of a green colour, degenerating into paleneſs.

The thorax being open'd, the lungs were found to be every where unconnected and ſound: nor had the heart, or the great veſſels, any thing

worthy of remark, except that in the latter there was little blood, and in the former a ſlight polypous concretion.

When the cranium was cut into, a little bloody ſerum flow'd down: and ſoon after we obſerv'd, that there was but a little blood in the ſinuſſes of the dura mater, and the larger branches that are ſpread through the pia mater.

The brain, which I was at firſt ſurpriz'd at in one who had labour'd under a melancholic delirium, was ſo lax, that when it was taken out, and laid upon the anatomical table, the very weight of the hemiſpheres collapſing outwards, made a diſtraction upon the poſterior part of the corpus calloſum: and yet it was not then the ſixth day after death.

This diſtraction did not prevent us from diſtinguiſhing, upon the remaining upper ſurface of the ſame corpus calloſum, which was ſound, that faſciculus which is protuberant in the middle longitudinally; and which, in this body, did not differ from its uſual appearance.

In cutting through the cerebrum ſoon after, I ſaw, that neither in the ſmall veſſels which paſs through the medullary ſubſtance, nor yet in the plexus choroides, was blood wanting: but I every where obſerv'd the ſame laxity as I did alſo in the cerebellum, and the medulla oblongata; and in the glandula pinealis itſelf; which appear'd rather bigger and more globular than uſual.

But in ſo great a laxity of the other parts, it was ſurprizing that the *lacunar*, or roof, which joins the right and left paries of the third ventricle together, was not at all overſtretch'd.

16. From the latter part of this hiſtory, you would have ſomething to add, by way of exception, to thoſe things that I have already ſaid (*e*) upon the brain of perſons who had been melancholically delirious; if the man had not ſeem'd to be recover'd before death. And from the remaining part you have what ſometimes happens from black hellebore; and what is found in the ſtomach and inteſtines in this caſe.

It is aſſerted by ſome, and particularly by Gulielmus Fabricius (*f*), not only that he had read of a prince being kill'd by a medicine prepar'd from black hellebore; but alſo that he remember'd a matron, of a pretty ſtrong habit of body, to have died, within ſix hours, after having taken ſome pills for her head, wherein a little of the ſame extract of hellebore had been mix'd; notwithſtanding they had brought on a diſcharge from the ſtomach and inteſtines no more than twice: both of which deaths he, with juſtice, ſuppos'd were not to be aſcrib'd to the hellebore itſelf, or to its extract; which he had made uſe of very ſucceſsfully both on himſelf and others, but to the negligence of thoſe who prepar'd the extract, or the hellebore; or to their unſkilfulneſs.

Yet what ſymptoms had preceded theſe deaths, or what injuries were found in the internal parts of their bodies after death, I do not now remember to have read, either in him or in others.

For as to Ardoynus (*g*) enumerating the ſymptoms that ariſe from this hellebore, and ſuppoſing them to be a very great flux of the belly, a parch'd ſtate

(*e*) Epiſt. 8. n. 14.
(*f*) Reſponſ. ad Doring.
(*g*) De Venenis l. 3. c. 13.

of

of the tongue, a very great eructation, and inflammation; beſides other ſymptoms that are common to ſome other poiſons, and among theſe, to white hellebore; in the number of which are ſtrangulation, ſyncope, loſs of ſtrength, cold ſweat, and ſpaſm from inanition; if we are to form a judgment from the obſervation in queſtion, moſt of theſe ſymptoms probably agree better with the white hellebore, than the black. At leaſt they did not appear in the man I have deſcrib'd.

But ſome of them have been obſerv'd, together with a violent vomiting, (which he, with great juſtice, aſcribes to the white hellebore) in thoſe who have died from taking this medicine; as in a woman, who, as Johannes de Muralto (*h*) relates, had very frequent vomitings therefrom; after which ſhe was agitated with horrible convulſions, wherein ſhe died: and as in a young whelp, which Wepfer ſpeaks of (*i*) as having died in the ſame manner; although the dog of which Courtenius (*k*) ſpeaks, that had taken down four times the quantity of the ſame hellebore, did indeed ſuffer vomitings, inteſtinal diſcharges, ſingultus, ſuffocations, and even to all appearance, pains; and yet eſcap'd nevertheleſs.

But be this as it will, you have heard what happen'd in this man from black hellebore; as you likewiſe have heard what appearances were found in his viſcera after death. For you might have learn'd from the well-known diſſections of the whelp, and the woman ſpoken of above, that from white hellebore the ſtomach has been found to be red, and even internally corroded, and of a black colour.

But what miſchief had been done to the ſtomach and inteſtines of the human body, by black hellebore, you perhaps could not have known for certain; except from the preſent deſcription. And if the miſchief really happen'd, as it ſeems to have done, from this circumſtance, that the man, after taking the extract, did not drink a large quantity of whey, as others always did, and as is order'd, even by Hippocrates (*l*), after black hellebore; hence then, likewiſe, thoſe things we have ſaid above (*m*), in regard to the advantage of drinking whey, in perſons who have taken an acrid poiſon, are confirm'd.

And neither the quantity, nor the ſtate, of the blood, ſhow the man to have been diſpos'd to inflammation; as it was in ſmall quantity, and fluid in conſiſtence. Yet I would not deny that the effects of poiſon are encreas'd by the diſpoſition of the body; as I readily acknowledge, that a poiſon may be ſometimes generated by the very diſpoſition of the body itſelf.

17. And indeed the ancient phyſicians alſo (*n*) acknowledg'd, "that "the ſame diſorders are produc'd from taking down into the ſtomach "a deadly poiſon, and from a corruption which has its origin from the "body:" that is to ſay, this corruption may be ſo violent "as to equal "both the quality and the ſtrength of the poiſon."

(*h*) Sepulchr. l. 3. S. 8. Obſ. 6.
(*i*) l. 4. S. hac 10. in Additam. Obſ. 8.
(*k*) Saggio delle Tranſaz. trad. dal Dereham T. 3. c. 9. §. 6.
(*l*) De Intern. Affect. n. 46. apud Marinell.
(*m*) n. 11.
(*n*) Vid. Gall. l. 6. de loc. aff. c. 5.

Nor were the greater part of the ſucceeding phyſicians averſe to this opinion. Which I believe no obſervation can more evidently confirm than this, which was formerly communicated to me by Giovanni Franceſco Cicognini, who was, while living, an eminent and experienc'd ſurgeon at Forli; and who having learnt the experiment at Florence, made it after the manner of Redi.

18. A little ſon of Franceſco Ridolfi, a painter at Forli, being emaciated and extenuated by a tertian fever, was at laſt carried off by dreadful convulſions; wherewith he was attack'd.

Upon opening the abdomen, the inteſtines appear'd to be drawn up to the meſentery, which was contracted; their coats being ſomewhat rigid, and in a manner dried up. And theſe viſcera, as well as the ſtomach, contain'd a great quantity of æruginous bile; by the contact of which the ſcalpel was ting'd of a violet colour.

This ſcalpel, tinctur'd, and even dropping, as it was, with the ſame bile; he impreſs'd ſlightly upon the fleſh of one, and another, pidgeon; in ſuch a manner, however, as to leave the bile remaining within the wound: in conſequence of which, they both died, in tremblings and convulſions, ſoon after. And indeed, a piece of bread mix'd with this bile, being taken down by a cock; this animal alſo died in a ſimilar manner.

19. Although that formerly very excellent phyſician, and Paduan profeſſor, Jo. Dominic Sala (*o*), aſſerted that internal poiſons "are rarely ge-"nerated in bodies, in other reſpects of a good habit, and that had not com-"mitted any errors in their method of living; and very rarely ſo ſuddenly "that the patient does not foreſee it from other parts, or from other acci-"dents;" yet in this very circumſtance, of not denying that this might happen rarely, or very rarely, he differ'd from thoſe phyſicians that were ſpoken of above (*p*); who did not doubt (*q*) but, on the appearance of ſymptoms of poiſon in the human body, "thoſe who had taken in poiſon might eaſily "be diſtinguiſh'd from thoſe who were affected from ſome other cauſe:" that is to ſay, from a poiſon generated within the body.

For they ſaid, that thoſe who, by their own nature, abounded with good juices, and "were like healthy perſons, had taken poiſon."

It is certainly of ſome importance, in forming ſuch a judgment, whether the man in queſtion was in health, or not. For in Severinus Falckius; to uſe examples taken from the Sepulchretum (*r*); neither the vomiting of every thing taken in, nor the ſtomach being internally red, and almoſt excoriated, could raiſe a ſuſpicion of poiſon having been given; eſpecially in the laſt ſtage of life: as the ſcurvy and irregular fevers, and after that, loſt appetite, and very ſevere pains of the ſtomach, had long been troubleſome.

On the other hand, in a young man for whom the opinion of Sala was aſk'd; beſides other ſymptoms of poiſon having been taken, this circumſtance, that he was of a good habit of body, and enjoy'd good health, had

(*o*) Vid. Sepulchr. l. 3. S. 7. in Schol. ad Obſ. 1. & 2.
(*p*) n. 17.
(*q*) Galen. c. 5. ibid. cit.
(*r*) Obſ. 1. & 2. modo cit.

ſo

ſo much influence upon Sala's opinion, that he never ſoften'd his ſuſpicion of poiſon, till, in another relation of the caſe, it was ſaid that he was a valetudinarian; and of a bad habit of body.

Yet, as he was a prudent man, he would not pronounce, in his firſt opinion, that poiſon had been given; nor in his ſecond, that it had not, for a certainty.

And indeed, although the body abounds with good juices; that very abundance is a reaſon why a man "ought to have a ſuſpicion of his own "happineſs;" that is to ſay, leſt "every thing be again carried backwards, "by a kind of ruin:" which are the words of Celſus (*s*), who follows the monitum of Hippocrates (*t*). And we know that wicked men, who attempt to poiſon others, frequently ſeek for the occaſion of weak health; that there may be no ſuſpicion of their wickedneſs: and this is ſhown by one of our obſervations above (*u*): and I have elſewhere obſerv'd that it has been done before in ancient times.

Thus, that moſt crafty woman, Agrippina (*x*), who was more worthy of her ſon than of her parents, having determin'd to take off her huſband by poiſon, and he being ſeiz'd with ill health, did not think that ſhe ought to omit this occaſion which was offer'd her: and the ſame woman made uſe, moreover, of other fallacies; not unuſual among perſons who attempt to kill by poiſon; in order to hide her wickedneſs.

For with this view, I ſuppoſe, it was that ſhe pour'd the poiſon "into the "delightful food of muſhrooms;" her huſband "being very fond of ſuch a "diſh" (*y*); ſo that he might ſeem, by eating much of them, to have hurt himſelf from the too great quantity; and alſo from ſome pernicious muſhroom, which was thrown among the good ones, as if by the error of the cook: whether, as it happen'd, "he was troubled with pains;" or "a vio-"lent vomiting," or "a purging;" or even "a fever" ſhould trouble him moſt; for that the latter of theſe "continu'd with him many years, even "to his dying day," is hinted by L. Annæus Seneca (*z*).

If you take notice of theſe, and other ſuch caſes, with me; you will be able, more eaſily, to diſtinguiſh the crafts of wicked men, who frequently impoſe upon phyſicians in the caſes of ſome patients: or, at leaſt, you will be led to ſuſpect them; and I wiſh it may be before it is too late: and you will, at the ſame time, perceive, not only by reaſon, but by obſervations alſo, that ſome certain ſymptoms, as thirſt, and ſome certain diſorders, as fever, which are ſaid by many to attend when a poiſon is inbred, may alſo attend when poiſon has been adminiſter'd; and even may have preceded.

Therefore Sala, whom I have already commended, although he denied that poiſon "is generated without a fever;" yet did not, for that reaſon, in his ſecond anſwer, aſcribe ſo much to this ſymptom, as to affirm that the young man had died from poiſon generated within. Nor, indeed, are we

(*s*) De Medic. l. 2. c. 2.
(*t*) Sect. 1. Aph. 3.
(*u*) n. 6.
(*x*) Vid. Tacit. Annal. l. 12.
(*y*) Vid. Sueton. de duodec. Cæſarib. l. 5. c. 44.
(*z*) Apocolocynt.

under

under a neceſſity of affirming the ſame, becauſe no unuſual odour or taſte, nor any pain, is perceiv'd in the mouth, or fauces, in ſwallowing, or after ſwallowing.

For to paſs over the promiſe of that wicked king Perſeus (*a*), of poiſon, which could not be detected by any ſign whatever, "either in being given, or after being given;" and to omit here other things, alſo, that might be ſaid; you perceive ſufficiently, from the obſervations I have related to you above (*b*), that poiſon has been taken in without any mark of it having been perceiv'd.

And, on the other hand, you ſee, that, from any animal's being diſorder'd by eating what has been thrown up by vomiting in theſe ſuſpected caſes, it is not to be inferr'd that this vomiting was from poiſon that had been taken in; and not from an in-bred poiſon; as the laſt-propos'd obſervation (*c*) clearly demonſtrates.

20. But that even the appearances found in the ſtomach after death may ſometimes impoſe upon us, we are taught by that circumſtance which I juſt now took notice of (*d*) in regard to Falckius. And to this you will add what has been transferr'd into the Sepulchretum from Ballonius (*e*), and from Riolanus, in like manner (*f*), when, in a body where poiſon was ſuſpected to have been given, the ſtomach was found to be beſet with exanthemata; and the phyſicians were juſt upon the point of abſolutely determining and aſſerting, that theſe exanthemata were owing to poiſon; if they had not been inform'd that they were owing to the meaſles; which had begun to break out on the ſkin, but were repell'd by reaſon of weakneſs in the patient, and occupied the ſtomach: and the ſame ſuſpicion, in many who died ſuddenly, has ariſen from hence, that the fundus of the ſtomach, and particularly the left part of it, was black, both internally and externally; whereas this was not to be attributed to poiſon, but to the blood ſtagnating there, within the ſmall veins which belong to that branch formerly call'd *vas breve*.

But, on the contrary, all ſpots obſerv'd in the ſtomach are not to be deſpis'd. And we ought to expand the ſtomach betwixt our eyes and the light, after opening it. For, by this means, that ſtomach, which ſeem'd only to be ſprinkled here and there with ſome ſpots, was found, as Ballonius (*g*) relates, to be perforated with very ſmall foramina, which are marks of poiſon: although even then I ſhould think we ought to determine by other marks whether the poiſon was external or internal.

And, indeed, ſometimes, not only a manifeſt, but a large ulcer may be found in the ſtomach; the firſt ſymptoms of the origin of which may ſeem to have been the conſequences of poiſon that was taken in; and yet the matter may not be clear from doubt.

Thus in a young man ſpoken of by Fabricius Hildanus (*h*), a pain of the ſtomach had begun firſt after a plentiful meal: and this pain increaſing gradually from that time, and becoming more ſevere, ſo as to kill the patient,

(*a*) Vid. Liv. Hiſt. l. 42.
(*b*) N. 7.
(*c*) N. 18.
(*d*) N. 19.
(*e*) Sect. hac 10. Obſ. 4. § 10.
(*f*) L. 3. S. 7. in Schol. ad Obſ. 10.
(*g*) Sect. ead. Obſ. 17. § 1.
(*h*) Ibid. Obſ. 5. cum Schol.

a large

a large ulcer was found in his ſtomach after death; extending itſelf from the upper orifice of the ſtomach, downwards, into the ſtomach: which ulcer the parents accounted for from poiſon having been given: but Fabricius thought it more probable, that the ulcer had begun from ſome little ſharp bone being infix'd in one of the rugæ of that orifice: for if the ulceration had been made by poiſon that was taken in; this, ſays he, "would have exiſted rather in the fundus itſelf, than in the orifice of the ſtomach."

Yet thoſe who ſhould chuſe to diſſent from Fabricius, might take objections from the caſes of thoſe two girls who were ſuſpected to have died by poiſon, and in one of whom Joannes de Muralto (*i*) found five black marks, as if they had been burnt in, near to the ſame orifice; and in the other of which Peter Paaw (*k*) found that very orifice eroded in two places: and, to ſay nothing of a man open'd by the ſame Paawius (*l*) on account of the ſame ſuſpicion, (for, beſides the ſubſtance of that orifice being eroded, he had alſo the remaining part of the ſtomach's internal ſurface eroded alſo) they might, however, produce the inſtance of a dog ſpoken of in the hiſtories publiſh'd by Wepfer (*m*); which having taken arſenic, and died the next day, ſhew'd, when diſſected, "the ſurface that lay near to the œſophagus, in the ſtomach, "to be red and inflam'd; but ſhew'd no mark of inflammation about the "pylorus, or in the fundus of the ſtomach."

Finally, that it may better appear how difficult it is to judge in this matter, it may ſometimes ſeem, in caſes of this kind, that the poiſon itſelf has been found in the ſtomach; as in a matron ſpoken of by Bened. Silvaticus (*n*), "that fine powder, of a cineritious colour, adhering to the ulcerated part "of the ſtomach, was taken for the moſt clear and certain mark of poiſon" having been given: or, as in the girl of Muraltus juſt now taken notice of, that other kind of "ſandy" powder, which ſubſided from the fluids found in the ſtomach, and receiv'd in a clean veſſel.

But unleſs the powder be found in ſuch a quantity as to be capable of being well examin'd by ſkilful perſons, and known to be poiſon; or, unleſs the particles of it, adhering to the eroded coats of the ſtomach, are of ſuch a kind as eaſily to diſcover themſelves; as that *gilla* which Heerſius (*o*) found adhering to them; or as the little pieces of white arſenic which Salmuthus (*p*) ſaw adhering to them, and juſt pull'd away; or unleſs, as in the woman, alſo, of whom is the firſt obſervation of this letter (*q*), they had other circumſtances whereby to determine; it will not be poſſible to pronounce any thing certain therefrom.

21. And as often as I conſider with myſelf all theſe things, and others that Etmuller; I mean the ſon; has conſider'd in a very learned and judicious manner, in a programma publiſh'd at Leipſic in the year 1729, ſhewing how difficult and dangerous it is to determine any thing certain in queſtions of this kind; I ſay, as often as ever I conſider theſe things, ſo often do I think that I acted very juſtly and properly, when, in ſome diſſections, which I

(*i*) L. eod. 3. Sepulchr. S. 8. Obſ. 7.
(*k*) L. 4. Sepulchr. S. hac 10. Obſ. 4. § 7.
(*l*) Ibid. § 8.
(*m*) Ibid. in Additam. Obſ. 13. Hiſt. 12.
(*n*) Ead. S. 10. Obſ. 5.
(*o*) Sepulch. l. 3. S. 8. Obſ. 8.
(*p*) Ibid. Obſ. 5.
(*q*) N. 3.

might

might have given you here, but have written to you formerly (*r*), I would not pronounce whether the poiſon was generated within, or taken in from without.

Yet in that woman, in whom I found not only the ſtomach and the inteſtine duodenum, but alſo the œſophagus, eroded (*s*); I ſhould have been able to take upon me to ſay more, if it had been certainly known that there had been no vomitings, whereby the poiſon, which was perhaps in-bred, being thrown up, had, by ſtagnating in ſome part of it, happen'd to injure the œſophagus.

It will not, therefore, be a ſlight proof of poiſon having been taken, that there are eroſions of the ſtomach, if they are join'd with no vomiting, and nevertheleſs with an eroſion of the œſophagus; eſpecially if they be found in a perſon who, being in good health, and having committed no error in his method of living, was ſuddenly ſeiz'd, after taking ſomething into the ſtomach; particularly any thing of an unuſual taſte or ſmell; with pains of the ſtomach, or anxieties, and other ſymptoms of poiſon being taken in, and died within a very ſhort time: not a ſlight conjecture will be drawn from all theſe, I ſay, or the greateſt part of them, being join'd into one.

But the caſe will be certain where the poiſon itſelf ſhall be found in the ſtomach, or in the neighbouring inteſtines, in ſuch a quantity as to be eaſily known. See alſo the marks of Hoffman (*t*), on occaſion of ſome hiſtories that well deſerve to be transferr'd into the Sepulchretum: for they propoſe both the ſymptoms and the diſſections in a proper manner, by no means omitting the reaſons, from whence, among the marks of poiſon having been given, and particularly of arſenic, that are common to many, we may underſtand that poiſon was not given to one, and was given to others.

But, in regard to that principal teſtimony of poiſon having been given; I mean, a portion of it found in the viſcera; as, according to the different ſtate of the poiſons, their very ſmall quantity, and their mixture with other things, it does not often occur; we muſt, therefore, take our evidences from other circumſtances; ſome of which, as they belong to the judges of capital affairs, are omitted by me: but one which concerns phyſicians muſt not be omitted; though of itſelf obvious, and obſerv'd once or twice by me in the courſe of my enquiries.

For, beſides that which I ſaw in the year 1711, and took notice of above (*u*); I mean, when three who ate of the ſame diſh were all affected with ſymptoms of poiſon ſoon after; it had already happen'd before, in the year 1709, that many of my fellow-citizens, whom I knew to be familiar with each other, and to be accuſtom'd to feaſt together ſometimes, call'd me to them within a few days; and, ſuſpecting that there was ſome one common cauſe of their falling ſick at one time, I found, by enquiry, that ſince the time they had all din'd together laſt, they had begun, at firſt, not to be very well, and ſoon after to be ill.

I aſk'd whether there were any others at this dinner beſides themſelves.

(*r*) Epiſt. 29. n. 18. & ſeqq.
(*s*) Ibid. n. 20.
(*t*) Medic. Rat. Tom. 4. P. 3. S. 2. c. 8. in Enarrat. Morb. Obſ. 2, 3, 4.
(*u*) N. 7. & ſeq.

And having heard that there were, and that all of them, not one excepted, now were ill of the ſame diſeaſe; and yet that none of them had eaten immoderately, or any-thing that was not quite wholeſome; and obſerving that few perſons were diſeas'd in the city that autumn; I thought it was ſcarcely to be doubted, but ſomething of a deprav'd nature and ſimilar to poiſon, had been mix'd up either in the foods or the liquors which had been made uſe of at that dinner: though, probably, owing to ſome accident.

But eaſy as it was to conjecture this in general, ſo difficult was it, either from the ſymptoms of the patients, or from an accurate and often-repeated enquiry, to learn what ingredient this was.

For the ſymptoms were different in different perſons, according to the various age, diſpoſition, and temperature, in different bodies; although in many of them, among other ſymptoms, were an inteſtinal flux, and tormina; and one of them diſcharg'd pure blood from the inteſtines, without tormina. But that I might have the beſt opportunity of enquiring into the truth, I undertook the more willingly to attend, without any reward, to the cure of the ſervant-maid who had dreſs'd the dinner, and eaten the remains of it; beſides the perſon who gave the dinner: for both of them were greatly affected; and the ſervant-maid very greatly indeed.

And though I frequently ſaid to the maid, how much more eaſy the cure would be, if ſhe would juſt tell me alone what ſhe had done by miſtake, or what ſhe could conjecture had been done by any-one elſe; I could never get any-thing out of her but this only, that the more ſhe thought of it, the more ignorant ſhe was in reſpect thereto.

This, then, being the ſtate of the caſe, I was neceſſarily oblig'd to treat every perſon accordingly as they were troubled with this or that ſymptom, in a greater or a leſſer degree. Some of them were ſav'd by a ſhort and eaſy method of treatment; but the others by a long and difficult courſe: ſo that in ſome the cure was continu'd for the ſpace of two months; and in him who diſcharg'd blood from the inteſtines, for the ſpace of four months.

One out of them all, who had made light of the diſeaſe for a very long time, was carried off on the nineteenth day from the time of taking to his bed, by a fever, which was attended with a ſingultus, convulſive tremors, and other malignant ſymptoms: notwithſtanding his ſenior phyſician and myſelf gave him all the aſſiſtance in our power.

22. The only way that was now left of inveſtigating the unknown cauſe of ſo many diſeaſes; I mean, anatomy; it was not poſſible, for many and various reaſons, to have recourſe to. And ſome of the ſame reaſons, alſo, prevented the diſſection of another perſon, who it was conjectur'd, on pretty good grounds, had been taken off by means of opium being given in too great a quantity, by a miſtake of the apothecary. Yet this diſſection would now have been the more agreeable to me, becauſe I ſee that the appearances obſerv'd in brute animals, which were open'd after a very large doſe of opium being given them, by the very experienc'd Sproegelius (*x*), do not very well agree with thoſe things that the celebrated Mead (*y*) had obſerv'd in a dog.

(*x*) Exper. circa varia venena, &c. Exp. 15. & ſeqq. (*y*) Tract. de Venenis Tent. 5.

However, I would not have you expect a word from me, in theſe letters, in regard to the deteſtable abuſe of opium in the hands of wicked men. For ſuch things as theſe, though they ought not to be unknown to phyſicians for many reaſons, yet ought never to be committed to public writings, but agitated in private conferences; leſt that which is neceſſary to be known, in order to find out the proper method of cure, ſhould be ſo abus'd by wicked men, as to give occaſion, from thence, to kill ſecretly and with impunity.

Wherefore, Galen (*z*) ſo far blames Orpheus ſirnam'd the Divine, Horus Mendeſius the younger, Heliodorus the Athenian, and other authors of books upon theſe compoſitions, as not even to grant that the knowledge of them is, at leaſt, neceſſary to phyſicians, in order to enable them to aſſiſt thoſe who have taken them. Be this as it will, it would certainly have been more prudent for ſome, in other reſpects very great phyſicians, who have ſucceeded him, to have ſuppreſs'd many things upon poiſons; and not to have made them public in letters, or even in books that are read univerſally.

23. But I do not remember that any diſſections have been made by me, or by my friends, of perſons who have died of the bite or wound given by a venomous animal; if you except thoſe which relate to the bite of a mad dog, and have been already communicated to you by me (*a*). For, to uſe the real words of Celſus (*b*), "Italy and the colder regions have the ad-"vantage of being preferable in this reſpect alſo, that they produce leſs ter-"rible ſnakes" than the hot countries.

Nor is the caſe much different, in general, in regard to venomous animals that are leſs than ſnakes: and it is certain, in regard to thoſe leſs hot parts of Italy in which I have been converſant, that thoſe perſons did not ſay true things, who related the following to Boerhaave (*c*): "That in Italy, where "there is a great number of ſcorpions, no perſon comes into an inn, but "the hoſt immediately points out to him a bottle full of the oil of ſcorpions; "that he may inſtantly anoint the wound therewith, if he has had a wound "inflicted by that animal, in order, by this means, to eſcape the danger of "death."

Yet I would not have any foreigners ſuppoſe them to be ſo rare in the regions of Italy, as Pliny ſeems to have aſſerted (*d*). "The Pſylli," ſays he; that is, a people of Afric, whoſe bodies were ſuppos'd to be natural antidotes againſt the poiſon of ſerpents, and other venomous animals; "who, by "bringing in the poiſons of other regions, have fill'd Italy with foreign "evils for the ſake of their own lucre, have endeavour'd, alſo, to import "theſe ſcorpions: but they could not live within the region of the Sicilian "atmoſphere. Yet they are ſometimes ſeen in Italy, though harmleſs."

If thoſe things which follow upon the ſubject of common ſcorpions would ſuffer me; I ſhould much more readily interpret Pliny ſo as to ſuppoſe him not ſpeaking of theſe, but of the wing'd ſcorpions of Africa, whereof he had ſpoken laſt: and this on account of what he had ſaid juſt before.

But as theſe things do not ſuffer me to interpret him thus, I ſuſpect that

(*z*) De Antidot. l. 2. c. 7.
(*a*) Epiſt. 8.
(*b*) De Medic. l. 5. c. 27. n. 10.
(*c*) Prælect. ad Inſtit. § 1132.
(*d*) Nat. Hiſt. l. 11. c. 25.

ſomething

ſomething is wanting: at leaſt, thoſe who wrote at Rome before Pliny, Lucilius and Cicero, would not have ſpoken of a rare animal by way of example in this manner: the former of theſe authors ſays (*e*), "like a ſcorpion bereft "of his tail;" and the latter (*f*), "We ſee that ſnakes creep, that duck-"lings ſwim, that blackbirds fly, that oxen make uſe of their horns, and "ſcorpions their ſtings:" but Cicero would rather have ſaid, *veſpas aculeis uti*, or "that waſps make uſe of their ſtings," as unſkilful perſons had formerly publiſh'd it; either becauſe they did not know what to make of the word *nepa*, which is an African word for a ſcorpion; or, at leaſt, becauſe they were ignorant that Nonius (*g*) had the two laſt words of Cicero in the very manner I have produc'd them: and, indeed, that he could not have produc'd them otherwiſe, according to the order of writing, and agreeably to the ſentiment.

But if any one believe, however, that Pliny aſſerts the ſcorpions in Italy to be "harmleſs;" this is ſo for the moſt part: nor do I remember that in the cities where I have reſided, even the moſt crowded cities, a phyſician, or a ſurgeon, was ever call'd to cure a wound inflicted by a ſcorpion; and ſtill leſs that any one ever died of ſuch a wound, ſo that the effects of the poiſon could be enquir'd into in the body after death.

And, indeed, you will ſee that the ſame thing is confirm'd by our Falloppius and Valliſneri. For the latter has written (*h*), that "a kind of in-"nocent poiſon" comes forth from the ſting of our ſcorpion; and Falloppius (*i*) has ſaid, that "in our region, where ſcorpions are leſs venomous," a tumour does not ariſe in the part which is wounded by them, as in the hot regions; but "only puſtules, and ſmall tubercles, ſimilar to the ſmall-pox."

And that we may prove the ſame thing by the authority of phyſicians who have liv'd in Italy, either in times, or in places, or in both, more diſtant from us than thoſe two; do you imagine that Scribonius, if he had ſeen noxious ſcorpions in Italy, would have written in this manner (*k*): "In Africa, or "whereſoever the ſcorpions are noxious:" and that Cornelius Celſus (*l*) would have plac'd the poiſon of the ſcorpions "among the foreign poiſons, and thoſe that were ſomewhat more peſtiferous" than our own?

And that he did ſo place it, not becauſe the ſcorpion was foreign, but becauſe the pernicious ſcorpion was foreign, ſeems to me to be ſufficiently prov'd by thoſe words of his which follow after having recounted many remedies (*): "Yet I know phyſicians who have done nothing elſe againſt the bite of a "ſcorpion, but let blood from the arm."

But Redi was diſtant from me in place, not in time; and Gentilis is now diſtant in place: both being Tuſcan phyſicians. The firſt of whom (*m*) affirm'd the ſame as Pliny, for this reaſon, that he had a hundred times ſeen the ſellers of ſcorpions thruſt their naked hands into the ſacks that

(*e*) Ex Satyr. l. 30. n. 23.
(*f*) De Finib. l. 5.
(*g*) De Propr. Serm. in *Nepa*.
(*h*) Opere Fiſ. Med. Tom. 2. P. 1.
(*i*) Tract. de Tumor. c. 3.
(*k*) Compoſ. Medic. 164.
(*l*) C. 27. cit.
(*) Ibid n. 5.
(*m*) Eſper. int. agl. Inſ.

were full of them; and often have blows from them: and yet never ſaw the leaſt ſign of poiſon follow thereupon; although it was the very height of the dog-days when theſe things happen'd. And the other (*n*), that fatal diſorders ſcarcely ever ariſe from the bites of ſcorpions, except in Africa. For that ſome perſons indeed have died by being bitten with the Italian ſcorpions; but that very few examples of this kind are related by the writers of natural hiſtory.

24. That learned man produces two examples; one from Ferrarius, and the other from Lanzonus. In both of them a vomiting, and even in one of them a volvulus, was fatal within a few hours. And I think it will not be improper to add other examples, as many as occur while I am writing, which perhaps would have ended fatally, if they had not been timely prevented by remedies. And I ſhall produce them the more readily, becauſe moſt of them happen'd at Padua.

Our Cortuſus being call'd to a fellow-citizen of his, who had been wounded by a large ſcorpion, "and was already ſeiz'd with a deliquium animi, re-"call'd him to life, in a very ſhort time," by the external aſſiſtance of a powder, which he had receiv'd from Matthiolus (*o*). Benivenius (*p*) cur'd, in a little time, a ſervant-man, who had been inſtantly thrown into a very cold and profuſe ſweat, by a ſimilar blow; by giving him theriaca in generous wine.

Peter a Caſtro, a famous phyſician at Verona, had his fore-finger wounded by a ſcorpion; in conſequence of which wound, pain and coldneſs ſoon ſeiz'd upon the whole arm; when he, having found but little effect from other remedies, was cur'd by that which his friend Rhodius (*q*) has tranſmitted down to us in his writings: adding this alſo, that the pain, nevertheleſs, return'd in the following year, at the ſame time, together with a *tumor phlegmonodes* of the finger.

But he ſays, that he had ſeen ſome "bites of ſcorpions to be of impor-"tance, by reaſon of their tumour, and their pain," at Padua. And indeed Valliſneri himſelf, who, as I have ſaid above (*r*), had acknowledg'd that the poiſon of theſe animals is in a manner harmleſs among us, finally changes his opinion in ſome meaſure; in an alphabetic ſpecimen of medical and natural hiſtory (*s*), which he left imperfect; and affirms that this poiſon is indeed "harmleſs in the winter, but that in ſummer it is deadly, even in "our regions."

Of this he has, however, produc'd only one example; which is an inſtance of a young woman, who, being ſtung in the neck by a ſcorpion, in the time of the dog-days, "had her limbs gradually become cold:" nor was any other remedy of advantage, out of the many made uſe of, but the oil of the great duke of Tuſcany, which is call'd *controveleni*, applied internally and externally.

(*n*) Annotaz. alla pag. 66. v. 23. della Lett. Filoſ.

(*o*) Vid. hujus Comment. in Dioſcor. l. 6. c. 29.

(*p*) De abditis Morbor. cauſ. c. 56.

(*q*) Cent. 3. Obſ. Med. 90.

(*r*) n. 23.

(*s*) Opere Tom. 3. P. 4. alla voce *Scorpione*.

But

But I would firſt have you take notice, that theſe were not fatal examples in the end: and in the ſecond place, what are ſo few examples to innumerable others, which are quite different therefrom? What is this laſt to ſo many others that I have pointed out (*t*) of Redi's, at the ſame very hot time of year?

For, although I grant that this poiſon becomes more acrid at ſuch a time of year, and that the bodies of men are more liable to be injur'd by it; yet in the month of October happen'd the caſe of Peter a Caſtro, and about the end of June that which is deſcrib'd by Lanzonus (*u*), in the words of a phyſician who had been preſent.

And though this, and the other alſo, of Ferrarius, were fatal by means of vomitings; yet in the latter, the ſcorpion had crept into the mouth of the boy while aſleep, and had wounded it: and in the former, the extremity of the inteſtinum rectum, of a woman who labour'd under a chloroſis, had been ſtruck by this animal, while ſhe was ſitting down, and diſcharging the fœces from her inteſtines.

And how much it tends to increaſe and accelerate the noxiouſneſs of the poiſon, if not only the wounded body be very tender, weak, and diſeas'd; but the part itſelf alſo is more ſoft, and endow'd with a more exquiſite ſenſe; you can, of yourſelf, very eaſily conceive: and indeed, unleſs we do admit this ſuppoſition, it is ſomewhat more difficult to have any idea, why the wounds of ſcorpions are not equally pernicious to all perſons: and not only amongſt us, but among other nations; if you except Africa, and places that lie in an equally hot climate.

25. For when I attend to the experiments which have been made at Montpelier, I am eaſily induc'd to believe, that the wounds of ſcorpions are, for the moſt part, harmleſs there alſo; as they are among us. Nor do I only ſpeak of the experiments which were made there, by Courtenius (*x*), in the year 1679.

For as to the whelp being prick'd by many ſcorpions in the tongue, and being ſtruck by them, more than once, upon the abdominal muſcles, after the common integuments were taken off; the ſting being preſs'd againſt the part more ſtrongly, even by art, and the poiſon being preſs'd out of the ſubjected veſicle into the wounds; and yet the dog's receiving no injury therefrom; nor yet a pigeon, which was frequently wounded, in the ſame manner, by a ſcorpion: and, on the other hand, that a mole, whoſe ſide had been prick'd by a ſcorpion, immediately died convuls'd: you may aſſign this reaſon for the difference, that the whelp and the pigeon were wounded by weak and languid ſcorpions; as it was in the beginning of January that theſe experiments were made; but that the mole was wounded by a ſtrong and keen ſcorpion: as this experiment was made about the middle of July.

I, therefore, chiefly have my eye to thoſe experiments, which were made there by the celebrated Maupertuis (*y*), fifty years after. Out of nine dogs, three little chickens, and one mouſe, which the ſcorpions had wounded, one

(*t*) n. 23.
(*u*) Eph. N. C. Dec. 3. A. 1. Obſ. 20.
(*x*) §. ſupra ad n. 16. cit.
(*y*) Mem. de l'Acad. R. des Sc. A. 1731.

dog

dog only died convuls'd; and he at five hours after being wounded, and after vomitings being frequently repeated: the twelve other animals receiv'd not the leaſt injury therefrom.

Yet in theſe animals the ſame places had been wounded, to all appearance, within a few days; and certainly by ſcorpions of the ſame kind, and in like manner ſtrong, acrid, and fierce: ſo that no cauſe of the difference can be deduc'd from hence, why one dog, and no more, died; eſpecially as this was wounded only by one, and ſome of the others by many ſcorpions; and even a much greater number of times; and had the ſting fix'd more deeply into them: and this promiſcuouſly, both by males and females; and in like manner ſuch as were freſh caught; ſo that we are not at liberty to ſuppoſe the cauſe of this difference to conſiſt, either in the variety of the ſex, or in the poiſon, which was perhaps quite conſum'd in former blows, as Redi (z) has juſtly conjectur'd; and not only in regard to vipers, but alſo in regard to the ſcorpions of Africa.

Yet it may be ſuppos'd to conſiſt in ſeveral different circumſtances; and perhaps in ſome one of them that are pointed out by Maupertuis. But becauſe it happens ſo rarely that ſcorpions bring on any great injury; I ſhould more readily believe, that it is neceſſary for many of them to conſpire together to bring it on: or, perhaps, that ſome other ought to be added, as the moſt conſiderable. I will illuſtrate my meaning by an example.

26. Among the ancients was a little flying animal, "whoſe Roman name "is aſilus;" to uſe the words of Virgil (*a*): "the Greeks, by tranſlation, "call it æſtron." That the ſame has been call'd by the Latins "tabanus," alſo, is ſhown by M. Varro (*b*); but ſtill more clearly by Pliny (*c*). Whether this animalcule be the ſame that is call'd by us *tabanus*, horſe-flie, or gad-bee, I ſhall certainly deny if you aſk me: but whether it be what the Tuſcans ſtill call *aſilus*, I ſhall be in doubt.

For certainly, either that is not the aſilus of the ancients, or does not always do the ſame thing that the antients have deſcrib'd to us; I mean, that they excite the oxen, which they wound, into madneſs. And this is true, that the very excellent Reaumur (*d*) thought he ought to enquire into the reaſon, why this effect ſometimes follows, and ſometimes does not.

Therefore, as he, contrary to Valliſneri (*e*), acknowledges no acrid juice in this animal, which it leaves in the wound; he does not, of courſe, at all enquire whether it leaves more at one time, and leſs at another: neither does he believe that the cauſe of the difference is to be accounted for, from the ſting being fix'd in more or leſs deeply; and for this reaſon, that it is neither more ſlender, nor is fix'd leſs deeply than the goad of herdſmen; who often pierce through the ſkin of oxen, but never excite them to fury by that means.

(z) cit. ſupra ad n. 23.
(*a*) Georg. l. 3. v. 147.
(*b*) De Re Ruſt. l. 2. c. 5.
(*c*) Nat. Hiſt. l. 11. c. 28.
(*d*) Memoir. pour ſerv. à l'Hiſt. des Inſect. Tom. 4. Mem. 12.
(*e*) Opere Tom. 1. P. 4.

He

He therefore ſuppoſes that when the ſting of the aſilus happens to prick ſome pretty large ſubcutaneous nerve, the ox is then furious; that when no nerve of this kind is prick'd, the ox is not furious. I however, if I were even very greatly practis'd in the diſſection of this animalcule, would not even then take upon me ſo much as to pronounce any thing againſt either of theſe gentlemen; who have not had their equals, in the very difficult inveſtigation of the hiſtory of inſects, in this age; and whoſe diſſenſions deſerve the moſt mature conſideration: but I ſhould rather endeavour, as my reſpect towards the memory of both requires, that if it were by any means poſſible, both their opinions might be compounded together; having a regard to a pretty thick nerve being prick'd, and at the ſame time to an acrid juice being inſtill'd into the wound; if I could poſſibly, at any time, find that ſuch a juice did proceed from the aſilus into the wound: and by that means entirely root up a certain ſcruple from my breaſt, in ſuppoſing it very difficult to happen, that the goad of the herdſmen alſo, ſhould never light on ſome pretty thick nerve, and drive the ox into a fury.

But now transferring the conjecture, of this very great man, from the aſilus to the ſcorpion; in regard to which we may compound both the opinions; I ſuſpect that very conſiderable diſorders may probably follow from the ſtroke of this animal, when the wound is inflicted upon any pretty thick nerve; or any other part of exquiſite ſenſation; and at the ſame time a very acrid poiſon inſtill'd into the wound.

And indeed, not only the animals that I have taken notice of (*f*), as having died from hence, but thoſe alſo that Redi (*g*) kill'd by means of an African ſcorpion, periſh'd in convulſions: and that woman alſo, of whom we ſpoke above (*h*), was convuls'd; and whatever other ſymptoms appear'd in her, and in others of the human ſpecies likewiſe, who did not die, may eaſily be explain'd upon the hypotheſis of convulſions: and it is the laudable opinion of the celebrated Mead (*i*), that other poiſons alſo, communicated by the ſtroke or bite of venomous animals, are injurious, by means of the nerves in particular.

27. But in regard to a poiſon, alſo, being infus'd together with the ſting, there is no longer any doubt. For although, after Pliny (*k*) had aſſerted "that the ſtings of ſcorpions are perforated with a ſlender tube, through "which the poiſon is infus'd; and "that Apollodorus (*l*) affirm'd this "poiſon to be of a white colour, when effus'd by them;" Galen (*m*) aroſe, and aſſerted, "that no foramen could be ſeen in their ſting;" and therefore, "that it was either a very ſmall quantity which they injected, or nothing "at all:" and, indeed, though Redi (*n*) in a very large ſcorpion, that is, an African ſcorpion, could not ſee any foramen, notwithſtanding he made uſe of the moſt exquiſite glaſſes; yet this author has confirm'd; not only from Aretinus, an ancient writer, (who might have copied from Pliny) but from many of his own obſervations upon that ſame ſcorpion; that a white fluid is diſ-

(*f*) ſupra n. 25.
(*g*) Eſper. ſupra ad n. 23. cit.
(*h*) n. 24.
(*i*) Introd. ad Expoſ. Mech. Venen.
(*k*) Nat. Hiſt. l. 11. c. 37.
(*l*) Ibid. c. 25.
(*m*) De Loc. aff. l. 6. c. 5.
(*n*) Eſper. cit.

charg'd

charg'd from the ſting. But others have ſeen the foramina; not to ſay the foramen; among whom was Valliſneri (*o*) in particular, who publiſh'd this diſcovery more than once after that, and ſhow'd why they were not ſeen by Redi, who ſought for them in the very extreme point of the ſting: and alſo why they ought not to have been in the extreme point; that is to ſay, leſt if the canal of the poiſon ſhould be brought on quite to the extremity of the ſting, it ſhould not only prevent the neceſſary ſlenderneſs and firmneſs of the ſting, but ſhould become liable to be ſtopp'd up by any the ſmalleſt particle of matter wherewith it ſhould meet.

And leſt you ſhould doubt, whether there are foramina in the ſcorpions of our country alſo; and theſe not in the extreme part of the ſting; Ferdinand Anthony Ghedini, a man of a moſt elegant genius, not only wrote to me in the year 1707, by what means he ſaw them in theſe ſcorpions; but Valliſneri has publiſh'd the letters of Ghedini, which I had communicated to him.

There are theſe peculiar circumſtances in Valliſneri: that the ſting has three ſurfaces like a triangular pyramid: that in each of theſe is a ſingle foramen: that through theſe foramina a very fluid humour is diſcharg'd: and that this humour is carried by a ſmall canal, which paſſes through the internodes of the tail, into the extremity from whence the ſting ſhoots forth.

You may enquire, in thoſe foreign and larger ſcorpions, from whence he ſeems to have taken this deſcription, whether theſe peculiarities are perpetual; and this moreover, what is the internal ſtructure of the laſt internode.

For beſides the veſicle which Coiterus (*p*) formerly referr'd to, by ſaying that, "under the ſting of the tail, wherewith the ſcorpion ſtrikes, a bladder full of poiſon lies hid;" it is very natural to ſuppoſe, that ſome muſcular fibres are contain'd there, whereby the poiſon may be preſs'd out. For the external part of the internode cannot, of itſelf, do that; as it is of a horny nature: and in an African ſcorpion, as Redi (*q*) has experienc'd, it does not yield to external compreſſion.

And under that cruſt, as we ſee in the claws of crabs, it muſt, of courſe, be that the muſcles are included; whereby, as well as the other internodes, the laſt alſo may be mov'd: and ſo ſome fleſhy, or tendinous expanſion, reaching within the laſt internode, might, by a ſtronger contraction than that whereby it moves this internode, compreſs even the veſicle.

28. But this poiſon is far leſs powerful and ſtrong in the ſcorpions of this country, and of other regions, not very hot; as, for inſtance, Montpelier; than it is in the African animals of this ſpecies. Wherefore, the violent ſymptoms which ariſe from thence, in Africa, do not occur frequently among us; and even are very rarely met with, as has been ſhown above (*r*): ſo that unleſs many cauſes; and among theſe, perhaps, the chief, that is to

(*o*) Vid. loca ſupra ad n. 23. & 24. indicata.
(*p*) Obſ. Anat. ex diverſis brutis.
(*q*) Eſper. cit.
(*r*) n. 23. & ſeqq.

ſay,

ſay, the pricking of ſome pretty large nerve, conſpire together in one perſon, it ſeems to be innocent, and without effect.

And when we ſuppoſe this, we naturally come down, with the celebrated Maupertuis (*s*), to that ſuſpicion of many remedies which are recommended againſt the bites of ſcorpions, having ſeem'd to be of advantage for this reaſon, that they have often been made uſe of upon ſuch men as have had a wound inflicted upon them indeed, but an innocent poiſon (if I may be allow'd thus to ſpeak) inſtill'd thereinto.

Amongſt theſe remedies, you know that, from the moſt ancient times, one, of the efficacy of which that celebrated man, in particular, doubts, and which is taken from the ſcorpion itſelf, has been recounted.

" The ſcorpion," ſays Celſus (*t*), " is the beſt remedy for itſelf, either " rubb'd down and laid upon the wound, or upon burning coals, that the " wound may be fumigated."

But the doubts of this gentleman, whom I have commended, ſeem to be confirm'd by this fumigation having been applied to that woman who was ſpoken of above (*u*), without effect; as ſhe, nevertheleſs, died of the wound of the ſcorpion: and alſo by the circumſtance of the ſcorpion itſelf having been bruis'd, and applied without effect to the wound of Peter a Caſtro; whoſe caſe we have alſo ſaid (*x*) to be ſimilar to thoſe of perſons bitten by the tarantula in this reſpect alſo, that in the following year the pain return'd at the ſame time.

For this was obſerv'd by Baglivi of thoſe who were wounded by the tarantula (*y*): and this author has alſo aſſerted (*z*), " that it is clear from ob- " ſervation, that thoſe who are prick'd by the ſcorpion, in la Puglia, ſuffer " almoſt the ſame ſymptoms as if they were bitten by the tarantula." But I have not recited thoſe ſymptoms and deaths above, as I have excepted the very hot parts of Italy. He, moreover, produces the diſſection of a rabbet which was kill'd by the tarantula (*a*): and does not ſcruple to aſſert (*b*), that, in perſons bitten thereby, " many ſymptoms ſeem to depend upon a deprav'd " imagination."

But theſe, and other circumſtances relative to the tarantula, I hope we ſhall have better explor'd and ſettled; if that very learned man Franceſco Serao ſhall be able, at any time, to complete what he has begun on the ſubject of this inſect.

Yet in the mean while, as far as relates to the ſcorpions of our country, I am not quite free from doubt, whether many of thoſe perſons who have ſeem'd to ſuffer violent ſymptoms from being wounded thereby, were not rather affected by a fear which diſturb'd the imagination: and not ſo much from the poiſon, (which was, perhaps, quite innocent) as from the agitation of the mind drawing the body violently into conſent.

And this doubt, in which I alſo ſee that Maupertuis (*c*) is involv'd, may

(*s*) Comment. ſupra ad n. 25. cit.
(*t*) De Medic. l. 5. c. 27. n. 5.
(*u*) N. 24.
(*x*) Ibid.
(*y*) Diſſert. de Tarant. c. 9. & Hiſt. 1.
(*z*) Ibid. c. 7. & Hiſt. 3.
(*a*) Ibid. c. 10.
(*b*) Ibid. c. 6.
(*c*) Comment. cit.

be in part prov'd by this circumſtance; that ſome of them, who have ſcarcely receiv'd any wound, immediately complain of thoſe ſymptoms which have not happen'd ſo ſoon even in thoſe that died from the ſame poiſon: and yet the ſame perſons, by the application of an antidote, or of ſome of thoſe things which the common-people and they make great account of; or of that which any phyſician, in whom they put great confidence, has recommended as a very certain remedy; immediately cry out that they feel no more diſorder, and that they are quite reſtor'd.

For this certainly ſeems to be a cure of the mind, not of the body: and if this has happen'd to procure reputation to any antidote, you ſee how undeſervedly it muſt have procur'd it; and that more certain remedies ought to be ſought after.

29. But the poiſon of the vipers among us is not, like that of the ſcorpions, frequently innocent: ſince a great number would certainly die of their bites, or would, at leaſt, be very greatly affected thereby, if theſe animals were not much more rare than the ſcorpions; and, by reaſon of their magnitude, could not be more eaſily obſerv'd and guarded againſt: I ſay, would be very greatly affected, as I do not know of any remedy being yet found out, on which the human ſpecies can or dare depend, in order to obviate, or overcome, thoſe very violent ſymptoms which ſucceed to the bite of a viper.

It had been very greatly recommended to eat the heads, and other parts of the vipers, for this purpoſe. But in the experiments of Redi (*d*) and Francini (*e*), the propoſal did not at all anſwer.

Since this, we have heard the fat of the vipers greatly cried up, and ſtill more of common oil, when applied to the part that was bitten.

Although it ſcarcely ſeem'd credible, that through ſo narrow and pretty deep foramina by which the biting viper immits its poiſon, ſufficient acceſs ſhould be given to oily liniments in particular; yet I choſe rather to leave the determination to time: which, as it has demonſtrated the more certain and uſeful efficacy of new remedies, as of the Peruvian bark, has alſo demonſtrated that of the transfuſion of the blood to be doubtful and dangerous; and, not to go too far from the matter now in queſtion, as it has ſhewn ſo many other remedies, formerly recommended againſt the venomous wounds of animals, to be of no effect, and has buried them in great oblivion: ſo that, for the ſake of example, which Abbatius (*f*) has ſaid "was tried "and tried at Padua, and found to be very uſeful," I have never heard of as being barely mention'd; much leſs as being made uſe of by any one; for almoſt the fifty years that I have liv'd in this city.

Scarcely, therefore, had a few years paſs'd, when thoſe Memoirs of the Royal Academy of Sciences at Paris came forth (*g*), in which we have ſeen it demonſtrated, by the experiments of thoſe celebrated men Geoffroy and Hunauld, how ſlight and dubious are thoſe boaſted effects of the oily or unctuous applications: and that this judgment was *right*, even that very learned Engliſh phyſician Mead (*h*) has confirm'd.

(*d*) Lettera ſopra alcune oppoſizioni, &c.
(*e*) Lettera del Platt fra le Opere del Redi Tom. 2. dell' Ediz. Veneta.
(*f*) De admirab. Viperæ natura. c. 31. in fin.
(*g*) A. 1737.
(*h*) Expoſ. Mechan. Venenor. Tent. 1.

And

And although this author has added, that a more probable praiſe might be aſcrib'd to the viper's fat; yet he has ingenuouſly confeſs'd, that this method of cure is not to be depended upon: and this you will eaſily allow, from the example produc'd in the Memoirs I have mention'd, of a man who was bitten by a viper.

But he recommends, in preference to other remedies, that eaſy and expeditious one, which I meant to ſpeak of above, when I denied that any remedy was yet found out whereto men dare truſt; I mean, that ſuction of the poiſon which is immediately made with the mouth.

For although Celſus (*i*) has ſo confidently recommended this againſt the bites of all ſerpents, as to aſſert that, by this means, the perſon who ſucks "would be ſafe, and would ſave the perſon whoſe wound he ſhould ſuck;" and though this, which was commended even by Dioſcorides (*k*), was in uſe, not only in the times of Galen (*l*), but alſo in thoſe of Aetius (*m*), Paulus (*n*), and Actuarius (*o*), by whom it is preſcrib'd; to omit Rhazes (*p*), and others; and, indeed, to deſcend to thoſe who liv'd nearer to our own times, though it has been recommended by Tagaultius alſo (*q*), Veſalius (*r*), Abbatius (*s*), Severinus (*t*), Redi (*u*), and Charaſius (*x*), and by others (*y*): I ſay, although it depends upon ſo many and ſo great authorities, yet we muſt not readily expect that the people can be induc'd to give credit to Celſus (*z*), or any-one elſe, when he ſays that this poiſon is injurious, "not by being taſted, but only in a wound:" not even if Severinus (*a*) ſhould cry out never ſo long, "Let any one ſuck "the poiſon out, and depend upon me, - - - I pronounce, upon my word "and credit, and will be ſurety for the event, that whoever ſhall ſuck out "this poiſon, will be free from every taint and danger."

30. And, indeed, I ſhould think that the people were very wiſe not to depend upon this ſurety, that there would be no danger in ſuch an operation (*b*); notwithſtanding the perſon who ſucks ſhould not attend to the monitum of Celſus (*c*), which is expreſsly confirm'd by moſt of the authors I have quoted: I mean, "That he has no ulcer in his gums, palate, or any other part of "the mouth."

This monitum Redi made ſo much account of, and with great juſtice, that I remember to have heard, from ſome one of thoſe who were then with him, that when one of them who drank the poiſon preſs'd out from the vipers, dipp'd a cruſt of bread into it at the ſame time, and ate it, Redi immediately blam'd him; leſt the cruſt, by wounding the gums, as it often happens to do, ſhould bring on inſtantaneous danger, inſtead of humouring the joke.

And the ſame author among other cauſes why a mountebank, who ſuck'd

(*i*) De Medic. l. 5. c. 27. S. 3.
(*k*) De Medic. Mat. l. 6. c. 40.
(*l*) Meth. medend. l. 13. c. 6. ad fin.
(*m*) Tetrabibl. 4. Serm. 1. c. 10.
(*n*) De Re Med. l. 5. c. 2.
(*o*) De Meth. Med. l. 6. c. 11.
(*p*) 8. Almanſ. c. 1.
(*q*) Inſtit. Chir. l. 2. c. 11.
(*r*) Chirurg. magn. l. 3. c. 14.
(*s*) L. cit. c. 31. & 32.
(*t*) Viperæ Pyth. P. 3. c. 5.
(*u*) Oſſervaz. int. alle Vipere.
(*x*) Vid. Sepulchr. S. hac 10. in Schol. ad Obſ. 6.
(*y*) Vid. du Hamel Reg. Sc. Acad. Hiſt. l. 4. c. 6. in fin.
(*z*) S. 3. cit.
(*a*) C. 5. cit.
(*b*) Ibid. & alibi.
(*c*) S. 3. cit.

the wound of his arm which had been bitten by an aſp, died; and even why two men who ſuck'd their fingers which were wounded by a viper, died nevertheleſs; as Ælianus (*d*), Matthiolus (*e*), and Amatus Luſitanus (*f*), have written; conjectur'd (*g*), that we ought to take for granted, that they happen'd to have their mouths injur'd by a kind of little ulcer.

Yet theſe, and other events to be taken notice of below (*h*), terrify men, while they are afraid leſt that which has happen'd to any-one, whatever the cauſe of it might be, ſhould happen to them in the ſame manner; eſpecially thoſe who have a ſcorbutic laxity of the gums, or any thing nearly of the kind: ſince Matthiolus (*i*) has obſerv'd, that, even without this, "blood "eaſily flows from the gums by the force of ſtrong ſuction."

They are alſo terrified by theſe other monita which moſt of theſe authors, who we have ſaid approve ſuction, in concurrence with Avicenna (*k*), have inculcated: I mean, that the perſon who ſucks it may not be faſting; that he muſt hold oil in his mouth after waſhing: and that he muſt immediately ſpit out what he has ſuck'd.

Theſe warnings are ſo much the more terrifying, becauſe the very learned Mead (*l*) himſelf commends almoſt the ſame things: although he ſays for this reaſon, "that the acrimony of the poiſon may not inflame the lips and "the tongue" of the perſon that ſucks it; nor without occaſion: ſince he, upon taſting the poiſon of the viper, together with other perſons, though mix'd with water, perceiv'd it to be "of an acrid and fiery taſte, as if the "tongue were perforated by any hot and burning body," this ſenſation laſting two or three hours: and, indeed, his companion, who would taſte it undiluted, got a little ulcer thereby upon his tongue, together with ſome inflammation and tumour, which remain'd for the ſpace of two days.

Men were far leſs terrified when they read either Severinus (*m*) aſſerting that this poiſon had a taſte like "the unripe ſervice-berry;" as Branchinus, a principal apothecary at Siena, perceiv'd, when, in the preſence of Severinus, "he lick'd it with his tongue, and taſted it, without ſuffering any miſchief "therefrom:" or Charaſius (*n*) affirming "that it had been taſted, and "ſwallow'd; as he had often experienc'd; and that it had neither hurt any "man nor any animal;" ſo that, as he at length adds, "he himſelf did not "decline taking it into his own mouth, without any previous or conſequent "waſhing of his mouth:" or Rhedi (*o*), in particular, ſaying "he had ſeen "in an infinite number of inſtances, that the lips of thoſe who lick'd it, and "ſwallow'd it, did not ſwell;" and ſpeaking of his ſervant Jacob, who lick'd or drank it every-now-and-then with a kind of pleaſure; as he certainly would not have done it on the following day, if he had receiv'd any injury in his mouth, or ſtomach, therefrom, or had perceiv'd an acrid and burning taſte; which, on the contrary, Redi aſſerts to be "a ſweet inſipid" in that poiſon, "and very ſimilar to the ſavour of oil of ſweet almonds."

(*d*) De Hiſt. Animal. l. 9. c. 62.
(*e*) Comment. in Dioſcor. l. 6. c. 40.
(*f*) Cent. 3. Curat. Med. 14.
(*g*) Obſerv. cit.
(*h*) N. 33.
(*i*) Ad c. 40. cit.
(*k*) Canon. l. 4. F. 6. tr. 3. c. 1.
(*l*) Tent. 1. cit.
(*m*) Cit. P. 2. c. 4. ad fin. & c. 8.
(*n*) Vid. Sepulchr. in Schol. ad Append. cit. Obſ. 6.
(*o*) Obſerv. cit.

But

But in regard to ſo great a diſſenſion among authors, it will be our place to ſpeak of that preſently again.

Now, then, judge whether, from this very diſſenſion, courage can be given to the people to make uſe of ſuction: eſpecially as they ſee that moſt authors, either among the ancients or moderns, who have recommended it, do not truſt more to that alone, in general, than to the remedy which, as well as the ſuction of the mouth, is immediately at hand, and yet not unlike it; or, at leaſt, is leſs liable to ſuſpicions; I mean, that of cupping-glaſſes: for, after the uſe of either of theſe remedies, they order ſtill other and other remedies; which is a very evident proof that ſuction, therefore, is not the remedy by which we may always depend upon the poiſon's being drawn out of the bottom of a very narrow wound; and even out of the windings and turnings of the adjacent cellular membranes, into which it may ſometimes have inſinuated itſelf.

And this you may ſuppoſe to be ſaid of other methods of ſuction, either by ſiphons, or leaches, or by any other means whatever.

But as to the more efficacious chirurgical remedies; ſuch as deep ſcarifications, burnings, or amputation; I have not ſpoken of them for this reaſon, that moſt perſons who are bitten by a viper, either do not admit of theſe remedies while they promiſe themſelves the ſame happy event which they hear many have receiv'd from a milder method of treatment, or, at length, cry out for the uſe of them too late: for that which Kramerus (*p*) aſſerts is very rare; I mean, that he knew a perſon who had his finger wounded by a viper, whereby his whole arm was inflam'd, and a fever and frequent ſwoonings had come on, together with deliria, ſpaſms, and other ſymptoms of the like kind: and yet that this perſon, "at the end of two-and-thirty "hours after receiving the wound, was cur'd perfectly by the amputation of "the finger." You ſee, therefore, why I omitted theſe things, and conſider'd only the milder methods; ſome of which I ſhall even take notice of below (*q*).

31. But how happen'd it, you will ſay, that ſo much reputation has been gain'd by ſuction, and many other of the milder kind of remedies, even in ancient times; unleſs men had been ſeen to be ſav'd by them?

I, however; to omit this conſideration, that it is very ſeldom any-one has eſcap'd without making uſe of many remedies, ſo that it was difficult to determine to which, in particular, he ow'd his ſafety; ſhall certainly think this worthy to be attended to, that many inſtances occur, among thoſe who have frequently made the experiment, of beaſts who have had their lives ſav'd after the wound of a viper, without the application of any remedy either internally or externally; notwithſtanding they have had violent ſymptoms therefrom: and, indeed, you will meet with inſtances where the bite had no bad effects at all; or, at leaſt, only very ſlight ſymptoms. Thus you will read that it happen'd very frequently to Redi (*r*).

So there are other obſervations of the Pariſians, as well thoſe that Du

(*p*) Commerc. Litter. A. 1735. Hebd. 11. n. 3. in fin.

(*q*) N. 33.

(*r*) Oſſerv. cit. e Lettera cit. int. alle Oppoſiz.

Hamel (*s*) quoted formerly, as thoſe that I have commended above (*t*), relative thereto. And if you enquire into the cauſe of theſe differences; I ſhall ſay that it might have been manifold, whether you conſider the vipers that bite, or the animals that are bitten, or both of them.

Thoſe circumſtances that are common to both are age, conſtitution of body, ſtrength, ſeaſon of the year, food, and climate; from the variety of which there may be a various degree of the injury given or receiv'd.

Thus; to ſpeak of different regions; you ſee which Severinus (*u*) excepts, as thoſe whoſe vipers are not noxious by their bites; although what had been related to him of the Engliſh vipers (*x*) by Houghton, does not at all agree with thoſe things that Mead (*y*) and others aſſert: eſpecially where Mead affirms that the experiments of Redi had anſwer'd with him in England, as they had with Du Verney before in France; or where he affirms that the ſame diſorders "are wont to ariſe, every-where, almoſt in a "ſimilar manner," from the bite of a viper: although, what is ſufficient for our preſent deſign, he confeſſes that, according to the "difference of "climates," and of the other circumſtances nearly that I have mention'd, "theſe diſorders may be heighten'd or diminiſh'd."

And you will eaſily conceive that one or the other of theſe two circumſtances may happen, according to the different magnitude of the biting viper, his rage, and the acrimony of his poiſon; if you ſuppoſe that, from a larger and more enrag'd viper, a greater quantity of poiſon is inſerted into the wound, and this wound is inflicted very deeply: for as to acrimony, the queſtion is very clear; and that this is different in different vipers, is prov'd by the difference which we have ſpoken of above (*z*), amongſt the authors I have referr'd to, in regard to the taſte of the poiſon, and its effects upon the lips and the tongue: for no one would be ſo preſumptuous as to doubt whether thoſe things, which are ſaid to be obſerv'd by theſe authors, were really obſerv'd or not.

To theſe things we muſt add that which is the chief; I mean, that there is a great deal of difference betwixt the viper which has juſt bitten frequently and repeatedly, and that which has not done it yet after reſting a conſiderable time.

For this was long ago recounted among the frauds of impoſtors, by the author of the book to Piſo (*a*), *De Theriaca*, that the vipers "were made "continually to bite" meat that was laid before them in private; for by theſe means "they muſt of courſe throw out the poiſon that was contain'd "in their mouths;" from whence you, on the contrary, may deduce one cauſe why the hungry vipers wound more dangerouſly; and add it to the cauſes which others have ſuppos'd.

However, what that ancient author has aſſerted is confirm'd by Redi (*b*), where he ſays, he had many times experienc'd, that vipers throw out all their poiſon, if not at the firſt, at leaſt at the ſecond bite; ſo that the third

(*s*) Reg. Sc. Acad. Hiſt. l. 4. S. 1. c. 1. n. 6.
(*t*) N. 26.
(*u*) L. cit. P. 3. c. 1.
(*x*) Vid. & P. 1. c. 7. § 3.
(*y*) Tent. 1. cit.
(*z*) N. 30.
(*a*) C. 12.
(*b*) Oſſerv. cit.

and

and fourth are afterwards quite free from poiſon: and although he hints below, that by the third alſo a poiſon may ſometimes be communicated; and even, in another place (*c*), not only propoſes an experiment, from whence the third, but alſo another, from whence the fourth appears to have been fatal; and the Pariſians (*d*) one from whence the ſeventh appears to have been ſo; yet if you ſhould chooſe to conſider theſe things alſo, which happen very rarely; you ſee that it is not oppoſite to our purpoſe: for we muſt at length come to that bite which is not injurious, ſooner or later, in proportion as the viper is larger or leſs; or at leaſt as it has leſs or more poiſon collected; or as it more ſlowly repairs the loſs of this humour; or more ſpeedily; or pours it out more plentifully or ſparingly at every bite; or, in fine, as it generates a leſs or more acrid poiſon; ſo that even the very laſt drop may be able to do what a larger drop is wont to effect.

32. To theſe circumſtances add thoſe that are peculiar to animals when bitten: ſuch as the magnitude or ſmallneſs of their bodies; the hardneſs or tenderneſs of their ſkins; the inert or acrimonious ſtate of their humours; the ſmaller or larger quantity of blood-veſſels, or nerves, that go to make up the part bitten; and other circumſtances of this kind. For the ſmall animals, *cæteris paribus*, die ſooner from the ſame quantity and acrimony of the poiſon; as reaſon evidently ſhows, and the experiments of Redi (*e*), and of the Pariſians (*f*) confirm.

Wherefore, it is not to be wonder'd at, if we read in the firſt, that; when the ſame viper had bitten five ducks, and three pigeons immediately after, and neither of the three laſt ducks periſh'd; the firſt of the pigeons died: or that, although birds very eaſily die from the bite of the viper, the horſe, bull, and other larger animals, that have an exceedingly hard ſkin, very frequently do not die: for they muſt of courſe receive leſs deep wounds.

Nor ſhould I be much ſurpriz'd, if the experiments that are transferr'd into the Sepulchretum (*g*), ſhould anſwer in the ſame manner, when often repeated: ſo that it would be certain theſe animals die the ſooneſt, who are ſupplied with the moſt acrid humours, and have the moſt vivid circulation; but thoſe that are ſupplied with more watry and viſcid humours, and have a ſlow circulation, more ſlowly; and indeed, that ſome cannot be kill'd at all by theſe means.

And certainly, as in one and the ſame ſpecies of animals, there may be a different conſtitution of the humours, and even of the ſolid parts: in which way I think we muſt underſtand what is prudently hinted by the Pariſians; I mean, how far it is to be ſuppos'd, that ſome animals of the ſame ſpecies ſuffer more or leſs grievous effects from the viperine poiſon; ſo that although this be emitted in the ſame quantity, and the bites ſeem equal, they do not die equally, or not equally ſoon or late: ſince, I ſay, theſe things are ſuppoſable; it ſeems that we may gather from hence, why the animals of one ſpecies do not always die in the ſame order in which they were bitten by the

(*c*) Lett. cit.
(*d*) cit. ſupra.
(*e*) Lett. cit.
(*f*) cit. ſupra.
(*g*) in Addit. ad Sect. hanc 10. Schol. 2. ad Obſ. 2.

viper; but ſometimes, as of the five pigeons of Charaſius (*b*), that firſt which receiv'd the fifth bite, and of the three chickens of the Pariſians, that much the lateſt which receiv'd the ſecond: although, as Charaſius is entirely ſilent, whether all the pigeons were wounded in the ſame part of the body, or in a different part; and the Pariſians had before ſaid, that not all, but "almoſt all" the chickens, on whom they made the experiment, were bitten in the ſame part; other cauſes may be added, whereto we may attribute that change of order in dying.

For the bite being receiv'd in that part where there are a great number of blood-veſſels, and thoſe large; or where there are very few, and theſe ſmall; or where there are many or few nerves in like manner; may be more pernicious, or more ſlight; ſo that, even by the very diſcharge of the blood, when it is quick and haſty, the poiſon may at the ſame time be thrown out, together with the blood; as has been obſerv'd by Redi (*i*): and whether this rejection might happen, in ſome meaſure, by the ſerum flowing out of the wound, you yourſelf will judge; for the Pariſians deny their having ſeen ſo great a diſcharge in thoſe animals which periſh'd, as in thoſe that were preſerv'd.

33. You will, without doubt, here aſk me, whether the poiſon of the viper, or its noxious quality, is carried into the internal parts of the body, by means of the veins, as moſt perſons imagine; or by the nerves, as the celebrated Mead (*k*) ſuppoſes. You will perhaps be influenc'd to think with the firſt, by that experiment, beſides others, which is propos'd in the Sepulchretum (*l*), as made "more than once" upon dogs; I mean, that by the poiſonous juice extracted from the heads of vipers (which were waſh'd with a little warm water, while they were preſs'd) and injected into the blood-veſſels, they periſh'd in a ſhort time.

But when you obſerve that many other things which are by no means poiſonous, when injected in the ſame manner, bring on death in a ſhort time equally (*m*); you will more willingly conſider the arguments which are produc'd by Mead for the way of the nerves. For he himſelf alſo, did not before diſallow the way of the veins (*n*); eſpecially where the queſtion was of poiſons being introduc'd by the wounds or bites of animals.

But he afterwards chang'd his opinion, and ſuppos'd, that, like poiſons when taken in, thoſe alſo that are infus'd by a wound, attack the nerves chiefly; as he had attended to the ſurprizing celerity wherewith the bite of a rattle-ſnake kills a dog, that is to ſay, "in leſs than a quarter of a "minute."

And even when the common viper had bitten the finger of a man, and he, as is mention'd above (*o*), had immediately applied his mouth to the wound and ſuck'd out the blood; "he fell down dead ſuddenly the moment it was "done:" or as the ſame Matthiolus, who ſaw it, ſays in another place (*p*),

(*b*) Sect. ead. Obſ. 6. §. 8.
(*i*) Lett. cit.
(*k*) Tent. 1. cit.
(*l*) Schol. 2. ſupra cit.
(*m*) Vid. ex. gr. inter inject. Courtenii §. cit. ſupra ad n. 16.
(*n*) Vid. Introd. ad Tentam.
(*o*) n. 30.
(*p*) Comment. in Præf. Dioſc. ad l. 6.

"fell

" fell ſuddenly down upon the ground, where being immediately depriv'd " of ſpeech, he died."

The effect was not fatal indeed, but very noxious and ſudden, from the ſame cauſe, in a viper-catcher, whom Sommerus (*q*) cur'd. For he having ſuck'd with his own mouth, two little wounds which were inflicted upon his finger by a viper; " his tongue immediately became tumid, as if he held an " apple in his mouth, together with an impediment of ſpeech and degluti- " tion, an obſcurity of the ſight, a tumour and heavineſs of the head."

Nor would I have you immediately believe, becauſe we have produc'd the conjecture of Redi (*r*), referring the cauſe of events of this kind to ſome little ulcer of the mouth; that the poiſon had enter'd into ſome veins which were open in the ulcer: for thoſe who are of the opinion with Mead, might, on the other hand, ſay, that not only the little veins, but the ſmall nerves alſo, lie open to the injuries of the poiſon in this ulcer.

And leſt you ſhould blame ſuction more than a bite; read, even in the Memoirs of the Pariſians, what happen'd to that Engliſhman, who would have the experiment, of being bitten by a viper, made upon him. That is to ſay, from a bite upon his hand, a violent pain extended itſelf immediately through the whole remaining part of the upper limb, even before the viper had ceas'd to bite.

And you will be led to ſuppoſe, that the pain is to be imputed to the nerves, not as wounded, but as infected with poiſon, from that memorable circumſtance taken notice of by Mead (*s*), " that the dog had bark'd but " little, while a wound was inflicted " with a ſharp needle, in a form ſimi- lar to the tooth of a viper; but that when, by the ſame needle, " the poiſon " was introduc'd, he then howl'd exceedingly."

But beſides the very ſpeedy progreſſion, or at leaſt ſometimes, of this poiſon, or of its noxious effects; which cannot be accounted for from the ſlow motion of the blood through the veins; add thereto the experiments of the ſame celebrated man upon the human blood, when receiv'd in a glaſs veſſel; as it was not at all chang'd, " either in colour, or conſiſtence," by reaſon of having the poiſon of the viper join'd with it: ſo that neither at that time, nor afterwards, could it be diſtinguiſh'd from a like portion of the ſame blood, to which nothing had been added.

Nor would I have you be ſtagger'd by what you will read in the Sepul- chretum (*t*), that, in animals kill'd by this poiſon, the blood was found to be coagulated; and even in the heart, and all the veins, " to be concreted " into very tenacious polypi." From the ſame Sepulchretum you will meet with contrary obſervations (*u*), of the blood being found " more fluid than " coagulated;" or " exceedingly thin and acrid;" or diſſolv'd " in part, " and corrupted;" and no-where " coagulated."

But if, nevertheleſs, you obſerve ſome obſervations amongſt theſe, which mention coagula and concretions; read frequently the Pariſians I have com- mended, who, although they relate that in England two pigeons had their

(*q*) Eph. N. C. Dec. 3. A. 3. Obſ. 152.
(*r*) n. 30.
(*s*) Tent. 1. cit.
(*t*) in Addit. ad hanc 10. S. Obſ. 1. & Schol. 2. ad Obſ. 2.
(*u*) Obſ. ead. 2. & Sect. ead. Obſ. 6.

blood coagulated, yet at the ſame time aſſert, that in the ſame, and many other ſpecies of animals, no ſign of coagulation, but, on the contrary, marks of fluidity, were found in the blood: and even Redi (*x*), who nevertheleſs had found a coagulation in ſome, expreſsly denies his having found it in all.

It therefore ſufficiently appears, that it is not the *immediate* and proper effect of this poiſon to coagulate the blood; nor yet to diſſolve it: but according to the various diſpoſitions of this fluid, and according to the various affections of the nerves in particular, whereby, as is ſaid above (*y*), the motion of the blood is ſurprizingly diſturb'd, it is vitiated in a various manner; ſo that, as you will perceive by reading over again the greater part of the obſervations referr'd to, in ſome it is of a very lively and bright red, in others black, and prone to corruption.

And this being the ſtate of the queſtion, you readily ſee, of yourſelf, that whenever medicines which are fill'd with volatile particles, that have been long ſince recommended againſt the bites of vipers, have ſeem'd to be of advantage, they have either lit on thoſe caſes wherein the blood was inclin'd to concretion, or have rather been uſeful by helping the nerves.

And this there would be the more reaſon for ſaying, if that method which ſucceeded ſo happily in the botanical pupil of that celebrated man Juſſieu (*z*); who had three fingers bitten by a viper, not without a numbneſs and inſenſibility of them almoſt immediately coming on, and a conſiderable tumour extended quite to the very hand; from a volatile alkaline remedy being given internally, and applied externally alſo, to the wound, join'd with the oil of amber; if this method, I ſay, when recurr'd to very early, as it is ſaid to have anſwer'd in a great number of brute animals, ſhould likewiſe be found hereafter to anſwer in the human ſpecies, or at leaſt in the greateſt part of that ſpecies.

34. Yet we are not, for that reaſon, to deny that the vitiated blood of thoſe who are bitten by a viper, accelerates death: and we muſt even grant to the Pariſians (*a*), that it contributes much thereto; eſpecially as when it is infected by a gangrene, which is generally wont to ſeize the wounded part, and the parts neareſt to it, it carries the ſame taint into the diſtant and internal parts; as was ſeen by them in the heart and liver of a gooſe; and had been ſometimes ſeen by others in the liver, which was of a blackiſh colour inclining to yellow; at other times in the ſtomach, the colour of which was "in ſome meaſure obſcure," not without "a kind of appearance of "lividneſs," or "more obſcure;" and in like manner in the meſentery and inteſtines, wherein that colour was "more manifeſt;" or, either thoſe "that were painted here and there with livid ſpots," and at the entrance of the biliary ducts were "infected with a lividneſs, or rather with a gangrenous "blackneſs," as you will find by reading over the obſervations pointed out above (*b*) in the Sepulchretum, and the ſcholium.

(*x*) Oſſervaz. cit. (*y*) n. 9. (*z*) Hiſt. de l' Acad. R. des Sc. A. 1747. Obſ. Anat. 2. (*a*) cit. ſupra n. 29. (*b*) n. 33.

Yet

Yet it ſometimes happens, not only that theſe appearances are not remark'd, but even that no external lividneſs appears any where; as in the little dog of Francini (*c*), which had "no tumour or livid appearance in any "part of the body:" and it is probable that from the ſmall nervous branches themſelves, that are there, being irritated by the envenom'd bite, contractions of the fibres are brought on, which cauſe the blood to ſtagnate in the neighbouring veſſels; from whence ariſe the beginnings of tumour, inflammation, lividneſs, and gangrene: unleſs it ſhould happen that there is ſuch a diſpoſition of the body, or of the wounded part, that, although in other places, as in that little dog, the nerves begin very ſoon to be convuls'd, yet the part which was bitten neither ſwells nor is livid; although it ſwells ſo very haſtily at other times, that the Pariſians have aſſerted (*d*) the beginning of the tumour to be obſerv'd in the ſame moment that the bite is receiv'd: yet in that noble youth whoſe hiſtory you ſee deſcrib'd by Charaſius, in the Sepulchretum (*e*), it was not obſerv'd till "after ſome "hours."

Nor does it ſeem that any other reaſon, beſides the different diſpoſition of bodies, can be aſſign'd why the tumour, in ſome perſons, extends itſelf but little, and in others extends itſelf very conſiderably; ſo that in the very ſame noble youth, when the whole limb, which had been wounded, was occupied thereby, together with the neighbouring hypochondrium and breaſt, it ſeem'd to be now proceeding on to attack the oppoſite ſide alſo: and in another example propos'd by the Pariſians, the tumour ſeiz'd on the hand oppoſite to that which was wounded ſtill much ſooner: and indeed our Falloppius (*f*), and Albertini (*g*), ſaw that the whole body was ſwollen from the bite of a viper; to omit Dioſcorides (*h*), whoſe words I know are differently read by different perſons (*i*).

Yet ſometimes caſes happen, in which, if you would wiſh to explain the effects of the bite of any venomous beaſt, it is not ſufficient to ſpeak of the peculiar diſpoſition of body; as when a horſe (*k*), whoſe right foot behind was ſaid to have been bitten by a field-mouſe, and which died in the ſpace of two days, appear'd, upon diſſection, to have not ſo much the cells of the adipoſe membrane, from the foot quite to the neck, fill'd with a yellow ſerum, and black here and there, as if from contuſion, and the muſcles flaccid; and theſe appearances on the right ſide; as to have the right lobe of the lungs diſtinguiſh'd with black ſpots, and the right auricle of the heart itſelf yellow and fill'd with ſerum; at the ſame time that the muſcles on the left ſide, as well as the lungs, and the auricle, were perfectly ſound: which difference you will not deduce from the virulence being carried into the blood from the wound, nor from a certain diſpoſition of the blood; but rather from the nerves on the right ſide being irritated; eſpecially if you have an eye to the ſtate of the auricles.

(*c*) Lettera cit. n. 29.
(*d*) Ibid. cit.
(*e*) Append. ad Obſ. 6. hujus 10. Sect.
(*f*) De Tumor. præt. nat. c. 3.
(*g*) Opuſc. 2. in Comment. Inſt. Sc. Bononon. Tom. 1.
(*h*) De Med. l. 6. c. 10.
(*i*) Severin. c. 1. cit. ſupra ad n. 31.
(*k*) Vid. Murry Quæſt. Med. Pariſ. propoſ. die ult. A. 1749. n. 4.

35. But that you may account for the varieties which are to be obſerv'd in the effects of the viperine poiſon, in other caſes; as well as in thoſe which I ſpoke of juſt now; from one or other of the cauſes that I mention'd lately, I will take notice to you here of ſome of the principal varieties.

A vomiting, if you attend to the greater part of the obſervations pointed out, you will ſcarcely ever ſuppoſe to be abſent. And yet Paulus (*l*), Aetius (*m*), and Avicenna (*n*), would not have ſpoken of it as they have done, if they had not ſeen it wanting in many; for the two latter ſay that they have ſeen it "ſometimes," and the former that it happen'd in "ſome perſons."

Nor does Courtenius (*o*), though he ſpeaks of many dogs, and among other ſymptoms does not ſpare to mention a kind of lethargic ſtupor; which is otherwiſe not taken notice of by many; as the "uſual" effect of this poiſon; give the leaſt hint of a vomiting: nor is this done in the experiments of that ſecond ſcholium; nor in thoſe of that ſixth obſervation, which we have referr'd to above, from the Sepulchretum (*p*); if you except one however, the words immediately ſubjected to which expreſsly ſay, "no vo-"miting was the conſequence."

In like manner in theſe experiments, and thoſe of Courtenius, I do not ſee that inteſtinal diſcharges which were worthy of notice, are ſpoken of; and yet the violence of theſe diſcharges, or their peculiar nature, has been obſerv'd by many authors: and the celebrated Mead (*q*) has ſaid, in reſpect to the dog which he had infected with this poiſon, by introducing the needle infected therewith: "the uſual diſturbances came on, vomitings, ſtools, &c." And certainly, in the third example of a man bitten by a viper, which is deſcrib'd by the Pariſians (*r*), it is very evident how violent both of them were.

But in the two which precede that, ſtools are not ſo much as mention'd; nor yet formerly by Dioſcorides (*s*), Aetius (*t*), Paulus (*u*), or Avicenna (*x*): the three firſt-mention'd of whom take notice of "tormina," Avicenna "a "heavineſs in the back," all of them "a difficulty of urine;" and indeed, inſtead of this, Aetius mentions "bloody urine," and almoſt all of them "bloody gums." Yet I do not remember to have read of theſe, and the difficulty of urine, in later obſervations.

Bloody urine, however, is taken notice of in both the dogs of Harderus (*y*); and I know that the man, ſpoken of in that firſt example among the Pariſians, complain'd of his back, and of tormina; and likewiſe that the young man of Charaſius (*z*) complain'd of ſevere and continual pains about the navel: and in him alſo was a tumour of the lips, which Redi (*a*) ſays was mention'd by Avicenna.

If this author therefore, and thoſe other ancient phyſicians, have not

(*l*) De Re Med. l. 5. c. 12.
(*m*) Tetrab. 4. S. 1. c. 21.
(*n*) Canon. l. 4. F. 6. tr. 3. c. 32.
(*o*) §. cit. ſupra ad n. 16.
(*p*) n. 33.
(*q*) Tent. 1, cit.
(*r*) cit. ſupra n. 29.
(*s*) (*t*) (*u*) (*x*) capitib. cit.
(*y*) Sepulchr. S. hac 10. in Additam. Obſ. 2.
(*z*) ſupra n. 34.
(*a*) Oſſervaz. cit.

omitted

not omitted the leſs frequent ſymptoms; ſo much the more reaſonable does it ſeem to ſuppoſe, that they would have ſpoken of inteſtinal diſcharges, if they were ſo frequently obſerv'd by them.

But I do not remember one author, either among the ancients or moderns, who has not ſeen convulſions, and has not ſpoken of them either under this very name, or under that of convulſive motions, tremors, tenſions, or horrors; or at leaſt who has not produc'd ſome ſymptom which could not be eaſily explain'd without them.

I omit other things which I am not at leiſure to produce: I omit all the ſymptoms I have ſpoken of but vomiting; which I have ſaid to have been ſo frequently obſerv'd; and which deſerves ſo much the more attention here, as the Pariſians, who have acknowledg'd it to come on "pretty conſtantly," have nevertheleſs denied that they had "generally" found any mark of inflammation in the ſtomach, and much leſs of gangrene: ſo that, in the great number of animals which they had diſſected at leaſt, it ſeems that it ought to be accounted for from the nerves being vellicated and convuls'd.

36. Nor indeed can we eaſily diſſent from that very learned man, whom I have often commended, when he thinks that from thence we ought to deduce the reaſon why thoſe who are bitten by a viper become icteric; for the mixture of a very little poiſon cannot ſo ſoon change the nature of the particles in the blood, nor the mode of their mixture, as it can, by convulſively conſtringing the beginnings of the biliary ducts in the liver, retain the particles of the bile which ought to be continually thrown off from the blood.

I alſo give credit to him in this reſpect, that the colour of the whole ſkin becomes "yellow" within leſs than a complete hour: yet I ſuppoſe this to be ſometimes only; and not ſo often that we can pronounce an effect of that kind to be "proper to this poiſon."

And I remember indeed to have found Cardanus (*b*) wondering that "thoſe who are bitten by vipers, very frequently contract ſuch a colour in "the twinkling of an eye."

But I have alſo read Donatus (*c*) ſince affirming, "that men ſeldom be-"come jaundic'd" from a virulent wound; and, for that reaſon, ſuppoſing this to happen only to thoſe perſons whoſe blood abounds with a very great quantity of bile; which, if it be yellow, tinges the ſkin of a yellow colour; if black, of a black colour; and if porraceous, of a porraceous colour.

And that the ſkin was ting'd of this colour, and not very ſoon neither, is certain from the example of Galen (*d*), which he produces; and with a citron colour, from another example which he quotes from Avenzoar (*e*); and not from the bite of a viper, as in the former, but from taking poiſon into the ſtomach.

To this add, that a yellow jaundice has been obſerv'd to come on from the pricking of ſpiders, as you have it in Etmuller (*f*); yet not always, nor

(*b*) Comment. in Hippocr. Aph. 62. l. 4.
(*c*) De Med. Hiſt. Mirab. l. 1. c. 9.
(*d*) De Loc. aff. l. 5. c. non 6. ſed 7.
(*e*) l. 1. tr. 13. c. 6.
(*f*) Prax. l. 1. S. 17. c. 3. art. 4.

from

from the pricking of all ſpiders. For you may ſee, for inſtance, what conſiderable diſorders that brought on of which Bernerus (*g*) ſpeaks; and how different, and, frequently, how much more pernicious, thoſe of which that learned man Brogiani (*h*) has written, under the name of the *Etruſcum Phalangium*, or venomous ſpider of Tuſcany, in a treatiſe which I could wiſh had been publiſh'd before I reviſ'd theſe letters that I had already written.

From them he alſo remark'd this, on account of which you may compare them with the venomous ſpider of La Puglia, and with that ſcorpion whereby I have ſaid (*i*) that Peter a Caſtro had been wounded; I mean, that in the following year the ſymptoms return'd at the ſame time. Yet you will obſerve that, among ſo many different injuries, no writer makes mention of the jaundice.

Moreover, although Etmuller ſubjoins the following words, "That the "ancients had already obſerv'd a jaundice, in general, to ariſe from the "bite of the viper, as Zacutus Luſitanus, l. 5. Medic. Princ. Hiſt. 29. relates;" yet, if you examine this author, you will find that he relates nothing more on this head than Donatus, whom he follows more than any-one can ſuſpect who does not compare them both together: yet he does not follow him well, where he deſcribes the obſervation of Braſavolus (*k*) upon Tombeſius; as if Donatus had produc'd this by way of an example which related to a jaundice brought on by the bite of a venomous animal.

Paulus, indeed (*l*), and Aetius (*m*), both of whom he quotes, have made mention of the jaundice from venomous bites: and, indeed, Aetius expreſsly ſays that it "is wont to happen" from thence. But both theſe authors ſpeak of poiſons in general: and not particularly of the viperine poiſon; and although the ſecond mentions this for the ſake of example, yet he aſſerts that the ſkin is from thence ting'd with a "porraceous" colour; and even when he has a peculiar treatiſe thereon (*n*) "with a leaden colour;" and Paulus (*o*), in general, ſuppoſes "a depravity of colour," which Avicenna (*p*) ſays is "inclin'd to greenneſs."

And that you may conceive the jaundice to be not always produc'd, and to be of different colours in different perſons; I would have you obſerve that Dioſcorides (*q*) had written, that "a whitiſh colour is brought on" thereby: and that the moſt ancient of all theſe authors, Nicander (*r*), has ſaid,

Nigricat ipſa cutis, plumbi modo fuſca colore,
Cærulea interdum eſt, æriſve ſimillima flori.

And to return to Zacutus; he has, in another place (*s*), an obſervation which relates very much to the preſent ſubject; an obſervation which I wonder is not transferr'd into the Sepulchretum, by reaſon of a gangrene found in

(*g*) Eph. N. C. Cent. 9. Obſ. 49.
(*h*) De Venen. Animant. P. 1.
(*i*) Supra, n. 24.
(*k*) Comment. in cit. Aphor. 62.
(*l*) De Re Med. l. 3. c. 50.
(*m*) Tetrab. 3. S. 1. c. 17.
(*n*) Tetrab. 4. S. 1. c. 21.
(*o*) L. 5. c. 12.
(*p*) Cit. ſupra ad n. 35.
(*q*) Cit. ſupra ad n. 34.
(*r*) Apud Severin. Viper. Pyth. P. 3. c. 1.
(*s*) De Medic. Princ. Hiſt. l. 2. Hiſt. 115. Obſ. 20.

the

the liver. That is to ſay, two reapers who were faſt aſleep, having been bitten by the ſame viper, and both being agitated by convulſions an hour after, one of them "fell into the moſt yellow jaundice after ten hours; and the "other," who could not be ſav'd, "fell into the moſt black jaundice after "fourteen hours; ſo as to bear the reſemblance of an Æthiopian."

But what varieties of the icteric colour later obſervators than Zacutus have remark'd, I cannot ſay; as, in the examples of the human ſpecies that are deſcrib'd, perhaps, on account of the regions wherein they were being leſs hot, I do not remember any mention to be made of the jaundice: nor yet in the great number of brute animals, whoſe eyes, at leaſt, while they were yet living, or membranes, here and there, when diſſected after death, would have ſhown an unuſual colour (eſpecially a yellow one) even to the moſt curſory examiners.

37. Thus you have a long diſcourſe upon the viper, (though, perhaps, not without its uſe in your ſtudies) from comparing, one with another, the writings which were in my hands, not only of the ancient, but alſo of the modern authors: ſo that I think you cannot retort upon me what was formerly retorted, in regard to the letters ſent to Lanciſi (*t*), upon the poiſon of the aſp, by gentlemen very learned, and in other reſpects very humane towards me; I mean, "that it would, perhaps, have been better to have made uſe "of my own experiments, than of the authority of Aetius, and the reſt of "the ancients, who frequently proceed too incautiouſly in theſe matters."

I have here, without doubt, made uſe of the experiments alſo of the moſt cautious moderns: and theſe I would likewiſe have made uſe of in that diſputation, if any ſuch had exiſted. For I had none of my own experiments to ſend you upon the viper, as I was always taken up with various and various other occupations; even when my time of life would have permitted me to make them; and as I was always averſe to experiments ſo full of danger, which would either have been injurious to me, as they had been to others, who had been long exercis'd in them (*u*), or would, at leaſt, have created irkſomeneſs and deteſtation (*x*).

But ſuppoſing I had not been reſtrain'd by theſe conſiderations; I do not ſee how theſe very learned men could expect that I ſhould have made experiments upon aſps, who have never been in Africa, and ſtill leſs in Ægypt. For Strabo (*y*) writes, "that the Ægyptian aſp," of which our diſputation chiefly was, "has ſomething peculiar to itſelf, in preference to the aſps "of other places." For as to aſps being ſpoken of as having been found out of Africa, and even in Italy itſelf, both by ancient and not ancient authors; without doubt, theſe writers have been led by the opinions and expreſſions of the common-people.

For "what we commonly call aſps have ſcarcely any reſemblance to thoſe" of

(*t*) In Append. ad Metallothecam Vatica. nam Mercati.

(*u*) Vid. Gentili Annotaz. alla pag. 73. v. 25. della Lett. Filoſ.

(*x*) Vid Redi Lett. int. alle Oppoſiz.

(*y*) De Situ Orb. l. 17.

which

which we were ſpeaking, as Salmaſius (z) has juſtly imagin'd: and, certainly, neither Lucan (a) would have ſaid of the aſp,

Ipſa caloris egens, gelidum non tranſit in orbem
Sponte ſua, Niloque tenus metitur arenas;

nor would it have been thus ſpoken of by Ovid (b),

Plenaque ſomniferis ſerpens peregrina venenis;

if "theſe ſpecies of ſepents" were not, to uſe the words of Celſus (c), really "not only foreign, but ſomewhat more peſtiferous; and eſpecially thoſe that "are generated in hot places."

Nor is this to be wonder'd at; ſince even within Italy itſelf the venomous wounds of ſome animals have different effects, in proportion as the places are more or leſs warm. Thus the tarantula, ſays Baglivi (d), "is only poiſonous "in La Puglia; and eſpecially that which is found in the plains: for that "which is found in the mountains round about, either has no poiſon at all, "or not one which is hurtful:" and ſtill leſs even thoſe tarantulæ of the plains, when carried into the other regions of Italy; as even the hiſtory propos'd (e) confirms.

We, certainly, have not ſuch a country as Lombardius (f) obſerves the Iriſh to have, when he from thence deduces the reaſon why he could never ſee any poiſonous animals there; and why the different animals of this kind which he had brought from England, were ſeen, for the moſt part, to die inflated and convuls'd, almoſt as ſoon as ever they were let looſe on Iriſh ground.

Yet if the ſame thing had happen'd to the aſps when brought here from Africa, as happens to the tarantula when carried elſewhere from La Puglia, muſt not my experiments have of courſe fail'd me?

Since, therefore, there was no poſſibility of making experiments without being very doubtful; and ſince, if there had been, the buſineſs of writing immediately, in which I was, for more than one reaſon, neceſſarily employ'd, would not have given me time to make the experiments; what was there left for me to do, but to make uſe of the teſtimonies of thoſe perſons who had either themſelves ſeen the effects of the bites of an aſp, or had read the writings of thoſe who had ſeen theſe effects?

38. And here you will, without doubt, enquire of me, in regard to the diſputation which I had with that very eminent man Lanciſi on the kind of death which Cleopatra ſuffer'd, what I really thought in my own mind; ſince it ſeems to have been undertaken by me, as frequently happens betwixt friends, for the ſake of exerciſe and ſpeculation: nor is any-thing publiſh'd by me by way of reply to his ſecond anſwer.

I, however, in an affair which could not be certainly determin'd without

(z) Plinian Exercit. in Solin.
(a) Pharſal. l. 9.
(b) Metam. l. 9.
(c) De Medic. l. 5. c. 27. S. 10.
(d) Diſſert. de Tarant. c. 7.
(e) C. 11. Hiſt. 8.
(f) Eph. N. C. Dec. 3. A. 3. Obſ. 79.

the

the teſtimonies of the ancients, having happen'd to obſerve theſe remarks, made by Lanciſi in the *Vaticana Metallotheca* (*g*), upon the image of dying Cleopatra: "On her arm is ſeen the aſp, by the bite of which it is the "vulgar opinion that Cleopatra died; although others contend that ſhe kill'd "herſelf by a draught of poiſon:" and ſuſpecting that ſome paſſage was extant, in an ancient author, to this effect, though unknown to me; I had a view to nothing elſe, in both the letters, but to get the knowledge of this paſſage, if there were ſuch a one, from Lanciſi.

With this intention I wrote once, and a ſecond time, to him, ſuch things as could be immediately advanc'd and affirm'd by me in favour of the more common opinion. And though I underſtood, from the firſt and ſecond of his letters, that there was no paſſage of this kind; I readily, however, purſu'd his deſire to make an end of the diſputation; eſpecially in a controverſy which had begun and proceeded, on the one hand, with ſuch a diffidence, and, on the other, with ſuch politeneſs and condeſcenſion, as to obtain great praiſes from learned men (*h*): ſo that it is not to be doubted, but one of theſe gentlemen, by whom it is ſaid to have been "very acrid," had nothing elſe in view but the ready, nervous, and full-ſtrain'd arguments, that were made uſe of on both ſides. For he is very favourable to both of us; and he aſcribes ſo much merit to me, in conſequence of a humanity which is equal to his doctrine and erudition, that I dar'd not even wiſh for ſuch aſcriptions. But I return back to my ſubject.

I, therefore, did not think proper to make any corrections, when, almoſt two years after, it happen'd that Lanciſi was to add an appendix to the *Metallotheca*; and wrote to me, that it was the pleaſure of our moſt holy maſter that this diſputation, which he had been ſo condeſcending as to read, ſhould be publiſh'd with it; and that his holineſs deſir'd he would ſignify this to me, if I ſhould wiſh to make any alterations or corrections in my letters, as he had done in his. For I wrote back to him, that the command of our maſter muſt be obey'd; and that it would be the more readily perceiv'd by every-one, that theſe letters were not written by me with an intent to publiſh them, if they came out in the ſame extempore dreſs in which they were firſt penn'd.

Nor, indeed, were the things I might have added of any great moment; yet ſome things there were which I ſhall now point out to you: not, however, in order to renew the controverſy after it has ſubſided, nor to ſet up the common opinion as a certain one; but only that you may not ſuppoſe there is nothing at all to be ſaid in behalf of one or the other opinion. Some of theſe arguments are to be taken from hiſtorians, ſome from phyſicians, ſome from both, and ſome from ſtill other authors.

Among the hiſtorians, Vellejus (*i*), Ælianus (*k*), and Florus (*l*), have aſſerted with common and full conſent, and without any doubt, that Cleopatra kill'd herſelf by the bite of an aſp. But Vellejus was addicted to the vice of flattery and adulation above what can be believ'd; and is not reckon'd

(*g*) Ad fin. Armar. 10.
(*h*) Giornale de' Letter. d'Ital. Tom. 33. P. 2. Art. 8. in fin.
(*i*) Hiſt. Rom. l. 2. c. 87.
(*k*) De Hiſt. Animal. l. 9. c. 61.
(*l*) De Geſt. Rom. l. 4. c. 11.

among the hiſtorians by Quinctilian: Florus has ſuffer'd himſelf to be carried away by a childiſh deſire of ſaying wonderful things, even at the expence of truth: and if to theſe accuſations, taken from Sigonius, Lipſius, and Scaliger, you add another, taken from Verderius (*m*), againſt Ælianus; this author, alſo, recedes from the truth, while he endeavours to ſeem a different perſon from Ariſtotle.

Yet it would have been much more eaſy to produce the praiſes of each hiſtorian from a much greater number of authors, than to have ſearch'd out theſe accuſations in ſome of them.

Theſe praiſes, however, I omit; ſince it is ſufficient to obſerve, in reſpect to the accuſations, that it was of no importance to Ariſtotle of what kind of death Cleopatra ſhould die in future times: and there was nothing wonderful in this, that ſhe who, after having made the experiment upon criminals, had found for a certainty, no poiſon to be more ſpeedily and mildly fatal than that from the bite of an aſp, ſhould make uſe of the ſame to deſtroy herſelf: and, finally, there was no adulation in reſpect to Auguſtus, by ſaying that ſhe died of this bite rather than by a draught of poiſon.

For as to Vellejus not being nam'd among the Latin hiſtorians by Quinctilian (*n*); neither is Cæſar himſelf nam'd: I ſuppoſe, becauſe he did not conſider the writings of either of them, though commendable, in the light of regular hiſtory, of which the queſtion was in that place; ſince Cæſar had left his book in the form of memoirs, or commentaries; and Vellejus, having promis'd a larger volume in more than one place (*o*), had touch'd, in general, only upon the principal heads of his narration.

39. But to theſe three hiſtorians are oppos'd an equal number who have not affirm'd the ſame thing; as Suetonius (*p*), Plutarch (*q*), and Dio (*r*): and it is even contended, that greater credit is to be given to the two laſt authors, by reaſon of their being Grecians; and, therefore, accuſtom'd to enquire after the truth of hiſtory with greater diligence than the Latins: particularly in an affair which relates to the Grecian empire; and as they are, if you attend to the places, more near to the ſpot; and, if you attend to the proofs of facts, better furniſh'd therewith.

I do not intend to mention that ſaying of Quinctilian (*s*), "There is ge-"nerally a licence in the Grecian hiſtories, ſimilar to that of poets;" and ſtill leſs that of Juvenal (*t*),

Quicquid Grecia mendax audet in hiſtoria:

"Whatever glaring falſity Greece dare aſſert in hiſtory."

And, indeed, I readily confeſs that there were excellent hiſtorians among the Greeks, by the help of whom we may even learn the Roman affairs; eſpecially as to what relates to the public rites and ceremonies.

For theſe cuſtoms, and other things of this kind, (as I think I have read

(*m*) Cenſion. in Auctor.
(*n*) Inſtit. Orator. l. 10.
(*o*) L. 2. c. 48. 96. 99. 103. 114. 119.
(*p*) De duodec. Cæſar. l. 2. c. 17.
(*q*) Græc. Rom. q. Ill. Vit. in Anton.
(*r*) Rom. Hiſt. l. 51.
(*s*) Inſtit. Orat. l. 2. c. 4.
(*t*) Juvenal. Sat. 10.

in

in a certain epiſtle of Grotius) foreigners remark and deliver down, more punctually than citizens; as the latter ſuppoſe that it was to no purpoſe to give an account of cuſtoms which were ſo well known to every-body.

But we alſo learn a great many circumſtances in regard to the political tranſactions of the Romans, from thoſe great hiſtorians among the Greeks; and in particular down to thoſe times wherein the Latins, at length, began to write their own actions with a greater degree of elegance.

For even "from the beginning of the Roman ſtate," as Cicero aſſerts (*u*), "quite down to the time of P. Mutius the *Pontifex Maximus*, all the public "tranſactions of every year were wont to be committed to writing by that "ſupreme officer of religion;" the manner of which annals, he ſays, "had "been imitated by many, who left, without any ornaments, only the mo-"numents of times, men, places, and affairs that had been tranſacted;" as the elder Cato, Pictor, and Piſo: which, without doubt, was the reaſon why their writings did not come down to us, contrary to the fate of thoſe writers who took upon them to ſpeak of the Roman affairs, in more elegant and pompous language.

And I think I do no injuſtice to the merit of any-one, if, in regard to the mode of the action, which is chiefly in queſtion here, and which increaſes the glory of neither party, I give more credit to one Latin author, in Roman hiſtory, than to two Grecians.

And to what purpoſe is it to ſhew, whether the war finiſh'd by Auguſtus, by the conqueſt of Antony and Cleopatra, ſo as to drive them to the neceſſity of killing themſelves, relates to the Roman or to the Grecian hiſtory; ſince both of them were Roman generals, and the prize of war was the kingdom of Ægypt reduc'd into a Roman province?

Yet Cleopatra was a Grecian, and that was a Greek kingdom; as their empire and their language flouriſh'd at Alexandria. Let it be ſo; for who denies it? The ancient origin both of the queen and of the kingdom were from the Greeks.

But do you, therefore, ſuppoſe the Grecian laws, cuſtoms, and language, to have reign'd in that kingdom after almoſt three hundred years? or the Ægyptian? or ſome other? a kingdom, whoſe kings, as Plutarch (*x*) himſelf confeſſes, had, before, "even not learn'd the Ægyptian language, nor "left the Macedonian:" and that part of the people which had been "an-"ciently from the Greeks, and was not unmindful of the cuſtoms and manners "common to the Greeks," had already "dwindled away" in the age of Polybius, as Strabo (*y*) aſſerts.

For as to what is ſaid of Plutarch and Dio being nearer in reſpect of place, and better furniſh'd with facts; it is ſo long a tract of land that disjoins Bœotia and Bythinia, of which countries they were, from Ægypt, that it may ſeem not to be a very much greater extent which is interpos'd betwixt Ægypt and Italy.

But, what is principally to be conſider'd in hiſtorians, there was, certainly, a leſs interval of time betwixt the death of Cleopatra and the time of Vel-

(*u*) De Oratore, l. 2. (*x*) In Antonio. (*y*) De ſitu Orbis, l. 17.

lejus, than that of Plutarch; and of Ælianus, than that of Dio. And can we ſuppoſe that Plutarch receiv'd the more certain proofs of facts from his grandfather, when relating what he had heard from Philotas, an intimate acquaintance of one of Anthony's cooks; or that Vellejus, who liv'd very near to that time, might have frequently heard, both in peace and war, (in the functions of which (z) he was very well vers'd, and, like his noble anceſtors, had obtain'd illuſtrious poſts and badges of glory) the relations of theſe facts from eminent men who had been with Auguſtus at Alexandria?

But if, as to this author, is objected his adulation towards Tiberius, who was then living, and not yet come to his worſt, but had, as Tacitus (a) ſays, "a "mixture of good and bad during the life of his mother;" with whoſe death Vellejus has made an end of this his hiſtory, ſending it ſoon after to Vinicius, who was conſul in the following year; ſo we ſhould be inclin'd to accuſe Dio and Plutarch; the cenſures of Valleſius, Rapin, Bodinus, Voſſius, and Lipſius, which expreſsly charge the former with plagiariſm, with deviation from truth, with hatred againſt the moſt virtuous characters, with frequent adulations, and with frequent blunders, would not be wanting; nor the cenſures of other authors to charge the latter with a great want of knowledge in the affairs of the Romans; and not only of the very ancient tranſactions, but of thoſe that have happen'd in not very ancient times: examples of which kind; to omit what is ſaid in Lambinus (b); Paulus Manutius (c) produces a great number of, even in regard to one fact: and wonders "that he ſhould blunder ſo ſhamefully;" which he alſo ſays, in other places (d), had happen'd to the ſame author "frequently:" although Bodinus (e) denies this to be ſurpriſing "in a man who was a native of Greece, "and confeſſes, in the life of Demoſthenes (f), that he did not underſtand "the Latin language ſufficiently well."

And of the ſame kind is that accuſation mention'd by Rhodius (g), that Plutarch, "having made uſe of the Latin codexes, was very often deceiv'd "in the affairs of the Romans."

Nor are thoſe miſtakes unknown, which Robortellus, an author whom I have commended heretofore (h), had remark'd in the ſame author, even in regard to the names of the Romans: nor that which Lipſius (i) ſays, where he expreſsly denies, not only that Plutarch, but that the Grecian hiſtorians in general, are to be preferr'd to the Romans; eſpecially in thoſe things that relate to foreign nations; and contends that the former "had not only err'd "in regard to the facts themſelves, but had ſhamefully blunder'd about "proper names in particular."

I, however, on account of the other very great merits of both theſe hiſtorians; I mean, of Dio, and Plutarch in particular; omit theſe objections the

(z) Vid. Voſſ. de Hiſt. Lat. l. 1. c. 24. & Boeclerî Indic. Vellejanum in *Vellejus*, cui adde Velleji, l. 2. c. 124. in fin.
(a) Annal. l. 5. in fin.
(b) Adnot. 16. in Cicer. Orat. pro Dejot.
(c) Comment. in Epiſt. 1. l. 2. Cicer. ad Q. Fr.
(d) Epiſt. 5. l. ejuſd.
(e) Meth. Hiſt. c. 4.
(f) In Proœm.
(g) Not. ad Scribon. Epiſt.
(h) Epiſt. ad Cel. Polen. de III. Conſul. Frontin.
(i) Var. Lect. l. 3. c. 20.

more

more willingly, becauſe neither of them, any more than Suetonius; who was himſelf likewiſe ſo much later than Vellejus; denies, finally, what this author has aſſerted in regard to the kind of death whereof Cleopatra died: and although they do not affirm it, yet they have many circumſtances from which, join'd together with the diagnoſtic doctrine of phyſicians, to whom we paſs on, we may defend the opinion of Vellejus.

40. For Dio (*k*) affirms, "that only ſmall punctures were found in the "arm" of Cleopatra after death: "two" of which punctures Plutarch (*l*) alſo takes notice of. And the ſame author and Suetonius (*m*) aſſert, that "*pſylli* were brought by Auguſtus, that they ſhould ſuck out the poiſon." From whence, then, ſhould they ſuck it, except from theſe envenom'd punctures? For how advantageous a remedy ſuction muſt have been, when applied thereto, is ſufficiently demonſtrated above (*n*), from the opinions both of ancient and modern phyſicians.

And that theſe very ſmall punctures, and in number two, agree very well with thoſe things that the ſame ancient phyſicians have deliver'd down, with univerſal conſent, in regard to the bite of the aſp, the ſecond letter of mine demonſtrates.

For they have been univerſally compar'd to little obſcure wounds that are inflicted by "a needle;" and almoſt all of theſe authors have aſſerted that they were "without any ſwelling;" and ſome have not omitted to tell us that they were "two in number."

Nor would I have you deſpiſe their united teſtimonies, as if they had copied from one another; for they did not always write from the knowledge of other perſons, but from their own likewiſe: and this you will readily learn from reading them attentively, or from Freind's Hiſtory of Medicine, where he has treated of each of them: and thoſe things that they have advanc'd from the knowledge of other perſons are, generally, the conſequences of obſervations of excellent phyſicians; which, if they had not preſerv'd them to us, we ſhould be intirely ignorant of.

Nor becauſe Dioſcorides; who, nevertheleſs, had himſelf alſo previouſly aſſerted (*o*) the ſame things that were written by all, or almoſt all, thoſe other authors, as I juſt now ſaid; either was not the perſon we have heard was the domeſtic of Cleopatra, or has not made any mention of her being kill'd by the bite of an aſp; are we, therefore, not to believe what he had ſaid of the very ſmall puncture without any tumour, which is the conſequence of this bite: although the paſſages wherein Cleopatra was mention'd may, perhaps, like ſo many other things which Maranta refers to (*p*), have been loſt from the codex of Dioſcorides by the depredations of time: nor are there ſtill wanting ſome perſons who give credit to Suidas (*q*), when he aſſerts, that this was the very Dioſcorides who "liv'd in Cleopatra's palace under Anthony;" as we have, in my opinion, ſome circumſtances whereby the arguments of thoſe who think otherwiſe are call'd into queſtion.

(*k*) L. 51. cit.
(*l*) Vit. Anton. cit.
(*m*) C. 17. cit.
(*n*) N. 29.
(*o*) De Medic. Mat. l. 6. c. 54.
(*p*) Meth. cognoſc. Simplic. l. 2. c. ult.
(*q*) Hiſtoric. ad Vocem *Dioſcorides*.

But

But to paſs over theſe things; I certainly do not think you will be ſtagger'd by this conſideration, that it does not ſeem probable the traces of ſo pernicious a bite ſhould be ſo ſlight and obſcure as the ancients have taught; but rather be led thereby to inquire into the cauſe of this admirable circumſtance, as they had even attempted to do in the time of Ælianus (*r*).

For they thought that this cauſe muſt be ſuppos'd to conſiſt in "the ſurpriſing celerity" wherewith that poiſon "paſſes on to the internal parts:" by which means, externally, "there is nothing of a prominence or tumour; "and for this reaſon," ſays he, "it was not eaſy for the party of Octavius "to diſcover in what manner Cleopatra had brought about her own death; "till at length, after a long enquiry, they diſcern'd two punctures that were "difficult to be ſeen."

And if you chuſe to illuſtrate this ancient thought by a recent explication; you may ſo much the more eaſily make uſe of that which we have often made uſe of above, when we ſuppos'd the poiſon to attack the nerves, in proportion as it is more evident, that this happens from the poiſon which the aſp inſerts by its bite; and which is call'd "ſoporiferous" by Ovid, as I have before related (*s*); as the aſp itſelf is call'd "ſomniferous" by Lucan (*t*); and with the ſame view, according to the opinion of the moſt learned men, by Helvius Cinna (*u*), *ſomniculoſa*; and expreſsly by Solinus (*x*) "hypnale:" and thus he explains it, "The hypnale kills by ſleep, an inſtance "of which we have in Cleopatra."

For in what manner; unleſs you ſay that the efficacy of this moſt minute poiſon is carried to the brain very ſpeedily, by means of the nerves; will you explain the following things, which I will quote in the words of Lucan (*y*), when ſpeaking to a perſon wounded by an aſp:

Nulloque dolore
Teſtatus morſus, ſubita caligine mortem
Accipis, & Stygias ſomno deſcendis ad umbras.
Non tam veloci corrumpunt pocula letho; &c.

And I have us'd the words of more than one poet, not becauſe, in regard to the ſomniferous poiſon of the aſp, and of "the ſpeedy dimneſs" from thence, as Dioſcorides himſelf (*z*) ſays, the words of phyſicians were wanting; but that you might perceive the efficacy of this poiſon to have been ſo commonly and certainly known to be hypnotic, as to be not only conſider'd in that view by phyſicians, but even in the writings of poets alſo.

The brain, therefore, being ſo ſpeedily and vehemently attack'd, it is not ſurprizing if the other parts of the body, which depend thereupon, are ſoon after depriv'd of their ſtrength; juſt as if an univerſal paralyſis were brought on; and, therefore, that the motion of the blood being inſtantly ſtopp'd, eſpecially through the ſmall ſubcutaneous branches, a redneſs, a lividneſs, or a tumour, can ſcarcely more ſhew themſelves in the punctur'd part, than if a mere carcaſe were prick'd.

(*r*) C. 61. ſupra ad n. 38. cit.
(*s*) N. 37. (*t*) L. ibid. cit.
(*u*) Apud Gell. Noct. Attic. l. 9. c. 12.
(*x*) Polyhiſt. c. 29.
(*y*) L. cit.
(*z*) C. 54. cit.

And

And thus it ſeems, that where the moſt inſtant death follows the bite of an aſp, the caſe may be explain'd: and, indeed, how ſpeedy the effect of it was in Cleopatra, is manifeſt from thoſe things that Plutarch (*a*) relates.

41. Aetius (*b*), you will ſay, has indeed aſſerted, that from one ſpecies of aſps follows the "moſt inſtantaneous" death; but that from another ſpecies death follows only "in three hours at moſt:" nor are ſome wanting who aſſert it to be ſtill more ſlow; and not to happen till after the body has become green and diſcolour'd.

And, indeed, the author of the book *De Theriaca* to Piſo (*c*), although he confeſſes that aſps "do really kill very ſpeedily, as he frequently ſaw in "Alexandria the Great;" nevertheleſs, ſufficiently ſhews, by immediately ſubjoining the following things, that the perſons bitten do not immediately fall down therefrom: "For when they do not chuſe to kill any criminal by "this kind of puniſhment without long torture and delay, they apply the "aſps to their breaſts, and make them walk about a little, and by this means "kill them in a ſhort time."

And even Plutarch (*d*) relates, that one of the ſervant-maids of Cleopatra was found fitting the diadem to the queen's head, and not incapable of ſpeaking. I grant it; but ſhe was half-dead: and immediately fell down, after uttering a few, and almoſt inarticulate words.

Nor did they who walk'd about *a little while* fail, for that reaſon, to die *in a ſhort time*, and *ſpeedily*.

And if any perſons dragg'd on their life to a longer extent of time, it is not at all ſurprizing that they ſhould, at length, have their bodies diſcolour'd and green, for this very reaſon: but if this had been common to all thus bitten, the pſylli would not have been made uſe of to Cleopatra; for her body being, as Plutarch relates (*e*), "neither deform'd, nor bearing any other "mark of poiſon," beſides thoſe two punctures, would have demonſtrated that ſhe had not been bitten by an aſp.

But I have diſputed of theſe things in ſuch a manner, as if, where ſome hours have paſs'd betwixt the envenom'd blow and death, it cannot poſſibly be otherwiſe, but that the place, whereby the poiſon is introduc'd, contracts a tumour and a lividneſs.

Yet certain inſtances are extant, which ſhew that, even after five or ſix hours have been interpos'd, no lividneſs or tumour has appear'd in the place; as in the pigeons which Redi (*f*) kill'd by the wounds of an African ſcorpion. And in the dog which the ſcorpion of Montpelier had wounded, and which died ſix hours after the ſtroke, the celebrated Maupertuis (*g*) found no tumour in the part where the wound had been receiv'd; whereas a tumour is generally the conſequence of the puncture of a bee or of a waſp; but in the place where every ſtroke was given, he found a red point only: and he denies that he had ever ſeen it otherwiſe, in the great number of animals upon which he made the ſame experiment.

(*a*) Vit. cit.
(*b*) Tetrabibl. 4. S. 1. c. 20.
(*c*) C. 8. (*d*) Vit. cit.
(*e*) Ibid.
(*f*) Eſper. int. agl. inſetti.
(*g*) Comment. ſupra cit. ad n. 25.

And

And to turn my diſcourſe from the aſp to an animal very ſimilar thereto, that is, the viper; you know, for a certainty, from what I have ſaid above (*b*), that in the whelp of Francini, no part of the body was livid, or tumid, even many hours after it had receiv'd the fatal bites from a viper; and that in the finger of a noble youth (*i*), which a viper had wounded, in ſuch a manner as to produce the moſt violent ſymptoms, though with one tooth only, a tumour at length appear'd, after ſome hours; whereas to that very time, nothing could be diſtinguiſh'd but "a puncture not larger than "that which is made by a ſmall needle: the foramen appearing very ſmall "on the ſurface, and being attended with the ſlighteſt redneſs; ſo as to be "known by the colour alone."

And if it is ſometimes no more from a viper, how much leſs will it be from an aſp, the poiſon of which, by creeping on ſo ſpeedily to the brain, does not leave time to the wounded part to be livid, and raiſe itſelf up into a tumour.

42. Now we are to ſee what Plutarch and Dio, if they are join'd with other authors beſides, ſupply us with in order to defend the common opinion more eaſily. In the firſt place then, we have this from Plutarch (*k*), that Cleopatra, who was a woman neither of a ſtupid, nor a humble mind, having foreſeen, before ſhe came into the power of Auguſtus, what fate might await her; had reſolv'd to die, rather than from a queen to become a ſlave, and be carried in triumph before the chariot of the victor.

With this view, that ſhe had procur'd a great quantity of poiſons, and had made experiments, with each of them, upon the bodies of criminals who had been capitally condemn'd: I mean, that ſhe might chooſe out, for herſelf, a poiſon whereby ſhe ſhould die not only without pain, but very ſpeedily; leſt, if death ſhould be ſlow in coming on, ſhe might be compell'd to live, by the unwelcome aſſiſtance of remedies.

Which of all theſe, then, ſhould we ſuppoſe ſhe had ſelected? She would, without doubt, have rejected minerals, as being contrary to both theſe her wiſhes, if they had been us'd by way of poiſon at that time; which I do not ever remember to have read of; eſpecially as thoſe chymical artifices, whereby their powers are exaſperated, and made more pernicious, were unknown.

The poiſons in uſe were from vegetables and animals: nor was various art wanting to make them ſpeedily fatal. One of theſe artifices we learn from Suetonius (*l*), when a poiſon, which kill'd within five hours, being, ſoon after, "boil'd and reboil'd frequently" by Locuſta; I ſuppoſe that the much greater part of the aqueous particles being diſſipated, the poiſonous ones might be more crowded together; "became inſtantly fatal."

And although this poiſon; whether it conſiſted of the juices of vegetables, or animals, or of both; was probably known to Cleopatra, as that certainly was which was taken from animals, and made uſe of by ſavage nations to tinge their arrows; a poiſon of the ſame kind with that, among the Scythians,

(*b*) n. 34.
(*i*) Hiſtor. ibid. indicata.
(*k*) Vita cit.
(*l*) De duodec. Cæſar. l. 6. c. 33.

mention'd

mention'd by Pliny (*m*), " irremediable," as he ſays, " and bringing on " death inſtantly by the ſlighteſt touch;" yet at the ſame time that ſhe might approve the quickneſs of the death, ſhe was averſe to that very ſhort, indeed, but very ſevere agony, the marks of which, I ſuppoſe, ſhe would have known from violent convulſions; which I conjecture to have been the immediate conſequences of that poiſon of Locuſta, becauſe Nero believ'd, that the deadly effect thereof might be conceal'd by a kind of epilepſy to which Britannicus was ſubject (*n*): and Mead (*o*) relates, that the water of Nichols, prepar'd from the lauro-ceraſus, was very ſpeedily fatal indeed; but not without violent convulſions: and finally, it appears from the experiments of Reaumur (*p*), that animals ſlightly prick'd with the points of arrows, when daub'd over with a certain poiſonous compoſition, by the inhabitants of the coaſt of Maragnonia, had died very ſoon indeed; but, as he particularly relates of a bear, that, before death, they had been ſhaken and agitated by convulſions.

For theſe, and other reaſons ſimilar thereto, I ſuppoſe, then, Plutarch related of Cleopatra, that, having firſt tried other poiſons in vain; as they did not well anſwer both her intentions; ſhe turn'd her thoughts to animals, as Dio alſo aſſerts (*q*): and after having tried animals likewiſe for many days, in vain, at length found that " the bite of the aſp was almoſt the only poi- " ſon " whereby ſhe could have both her ends anſwer'd.

And if you attend to all theſe circumſtances; you will eaſily underſtand why, rejecting other poiſons which kill'd inſtantaneouſly; ſome of which ſhe had at hand, as I ſhall ſhow below (*r*); it is by far the moſt reaſonable to ſuppoſe that ſhe preferr'd the bite of the aſp; eſpecially as the other things that are ſaid above of thoſe two very ſmall punctures, and of the pſylli being applied (*s*), exactly agree therewith.

For as to a learned man, perhaps, ſeeming, to thoſe who may read him with but little attention, to have thought of the pſylli, as if they had been applied by Auguſtus, only through a kind of mockery; it is ſufficient to inſpect Suetonius (*t*), and Dio (*u*), in order to ſee plainly that it was done by Auguſtus, with intent that Cleopatra " might be ſav'd to adorn " his triumph, as he earneſtly deſir'd:" and that, after he ſaw ſhe could not be ſav'd by the pſylli, " who ſuck'd out the poiſon and the virus, he " griev'd exceedingly; thinking himſelf depriv'd of all the glory of his " triumph."

And if he who was immediately preſent, and inſpected the body, and by means of his power and ingenuity could examine into every circumſtance, and make every neceſſary enquiry, ſuppos'd her to have been kill'd by the bite of an aſp, as Plutarch (*x*) relates; " for in the triumph he bore the image " of Cleopatra, having an aſp fix'd to her by its teeth;" why ſhould we

(*m*) Nat. Hiſt. l. 11. c. 33.
(*n*) Vid. Tacit. Annal. l. 13.
(*o*) in Append. poſt Tentam. 5. de Venen.
(*p*) Hiſt. de l' Acad. R. des Sc. A. 1747. Obſ. Anat. 1.
(*q*) l. 51. cit.
(*r*) n. 44.
(*s*) n. 40.
(*t*) c. 17. cit. ſupra ad n. 39.
(*u*) l. 51. cit.
(*x*) Vita cit.

not believe what he believ'd? eſpecially as other corroborating circumſtances are moreover added, which we ſhall immediately produce from the ſame Plutarch, from Dio, and others, even medical authors.

43. For what is to be argued from the circumſtance related by Plutarch (*y*) for a certainty; I mean, that on the ſame day whereon Cleopatra died, and even a few hours before her death, a box was brought to her out of the fields, "full of figs, and cover'd with leaves," but that which he tells us was afterwards ſaid, that the aſp had been hidden in the box?

And this Dio (*z*) alſo relates from others; although he ſays, "that an "aſp was brought in an urn, or among ſome flowers;" and the author of the book *De Theriaca* (*a*), that it was "cover'd over with figs and grapes." And while I attend to theſe relations, I ſeem able, at the ſame time, to conjecture what ſpecies of aſp it was.

For as they have aſſerted that there are three ſpecies (*b*); calling ſome ptyades, others terreſtres, and others chelidoniæ; and have ſaid that thoſe of the firſt ſpecies were "of the length of two cubits," the ſecond ſometimes "of the length of five cubits," and that the third ſpecies were found to be only "a little longer than a cubit;" theſe laſt, not only as more eaſily to be found; having their lurking-places about the banks of rivers, "and eſpecially about the Nile," which was ſo near; and in like manner as bringing on a more ſpeedy death than the others; for from the bite of theſe "the moſt inſtantaneous death comes on;" and not only theſe circumſtances, but being much more eaſily conceal'd under flowers and leaves, by reaſon of their ſhortneſs; theſe laſt, I ſay, I do not doubt were more convenient for Cleopatra, and particularly more proper to deceive thoſe who kept guard at the gate.

And herewith agrees the very ancient and learned artiſt of the Vatican ſtatue, who, not only very ſkilfully expreſs'd the dying Cleopatra as if in a placid ſleep, but alſo plac'd upon her arm a ſhort aſp, and that on the left arm; having, I ſuppoſe, taken this idea from ſome ancient writer, from whom Oroſius (*c*) likewiſe, otherwiſe an hiſtorian of the fifth century, ſeems to have taken it.

But whether the affair was manag'd in this manner, or, as others, ſpoken of by the ſame Plutarch (*d*), related, "the aſp was kept ſhut up in a cer-"tain veſſel, and brought forth by Cleopatra through a golden pipe;" either one or the other relation has a final tendency to prove that ſhe ſuffer'd herſelf to be bitten by an aſp.

You ſee then, that what has been related by Plutarch, and others, agree with the things that have been aſſerted by Vellejus and ſeveral authors ſpoken of in the beginning. And the author of the book *De Theriaca* (*e*), whom I mention'd before, ſufficiently ſhows that the ſame opinion was the moſt probable to him. And whether this author was Galen, or ſome other, at leaſt, who was cotemporary with Galen; as he ſays (*f*), that Andromachus

(*y*) Ibid.
(*z*) l. 51. cit.
(*a*) c. 8.
(*b*) Vid. Aetii c. 20. ſupra ad. n. 41. cit.
(*c*) Hiſtoriar. l. 6. c. 17.
(*d*) Vita cit.
(*e*) c. cit.
(*f*) c. 5.

chus " was not many years before him," and " that Marcus Antoninus " had, ſome little time before, govern'd the Roman empire with the greateſt " integrity " (*g*); he is not to be deſpis'd by us: ſince, if you conſider his age, he was neither younger than Dio, nor finally, a great deal later than Plutarch; for it is certain, not only that Plutarch liv'd during the reign of the emperor Hadrian, but that Galen was born at that time; and if you attend to experience, he alone of all thoſe authors that I have quoted above, expreſsly ſays, as you have read juſt now (*h*), that he had often ſeen, at Alexandria, in what manner, and how ſpeedily, aſps kill when applied to the body.

Nor becauſe he ſays, that Cleopatra had made uſe of one of thoſe call'd ptyades; which, however, I do not find to be aſſerted by any one of the older authors; will you ſuppoſe that ſhe wiſh'd to do it for this reaſon, that ſhe might be ſpit upon by the ptyades; for from thence " death fol- " lows very ſlowly," as is aſſerted by Aetius (*i*); but that ſhe might be bitten: for this kind of aſp bites, as the ſame author ſubjoins; and by biting, as Galen ſays in Paulus (*k*), " brings on the moſt ſpeedy " death."

And indeed, unleſs Paulus had his eye to ſome other paſſage of Galen, in the books that have been loſt; he muſt have conſider'd this very book *De Theriaca*, as one of Galen's; and have taken from thence what he ſpeaks of as ſaid by Galen: I mean, theſe three kinds of aſps, and the ingenuity of the ptyades, in reaching by his ſpittle perſons at a diſtance from him; and Cleopatra killing herſelf therewith. For theſe things are ſaid in both places.

But as to its being ſaid in the book *De Theriaca*, that the queen had made uſe of a ptyades to kill herſelf, this Paulus has ſuppos'd, with great juſtice and propriety, is to be underſtood of the bite; for it was by no means neceſſary to apply it to her body, in order to be ſpit upon by it, as it was accuſtom'd to ſpit afar off.

And as to thoſe things that are ſoon after ſubjoin'd, in that ſame book, of the ſpeedy death of condemn'd criminals, by applying an aſp to the breaſt; perhaps Paulus, thinking that theſe circumſtances were to be connected with the former, brought in Galen as leading to the licence of the painters and ſtatuaries; as if he had ſaid, that the queen " had applied to her left breaſt " an aſp of the ptyades kind, and had been deſtroy'd by the bite of that " animal."

But we are prevented from believing this by Plutarch and Dio, who deny, as we have ſeen above (*l*), that there appear'd any mark of poiſon in her body after death; except two very ſmall punctures in her arm. And this circumſtance is alſo ſufficient to ſhow us, that it was not without reaſon the ſame author of the book *De Theriaca*, in relating a different narration of ſome other perſons, did it in ſuch words as ſhow'd himſelf to be not at all ſatisfied therewith: a narration, that is to ſay, " of a large and deep wound," which

(*g*) c. 2.
(*h*) n. 41.
(*i*) c. 20. cit.
(*k*) De Re Med. l. 5. c. 18.
(*l*) n. 40. 41.

Cleopatra " made upon her arm with her teeth; and of poiſon which ſhe " had previouſly procur'd from the aſp, being brought to her in a certain " box, and infus'd into that wound" ſoon after.

44. But thoſe very ſmall punctures in the arm, as they diſprove the report of a large and deep wound in the arm; ſo they exceedingly well agree, you will ſay, with another narration, which is extant in Dio (*m*), though not in the author of the ſame book: I mean, that Cleopatra had taken the needle, or bodkin, which ſhe was wont to pin up her hair with, and wear conſtantly therein, from her head; and after having daub'd it over with the moſt virulent poiſon, had prick'd her own arm with it.

But I would have you read Redi (*n*), where he admoniſhes you, in conſequence of his own experiments, that if the wound you make be narrow, it is difficult to introduce the poiſon: and whatever the wound may be, that the animal does not die ſo ſoon after having the poiſon of the viper injected into the wound already made, as after the bite of the viper itſelf.

And after theſe conſiderations, can you ſuppoſe, that ſhe who wiſh'd the moſt certain, and moſt ſpeedy death, would have made uſe of an uncertain and leſs ſpeedy method of dying? And yet our diſputation was not of poiſon being thus introduc'd, but chiefly of poiſon being drunk.

And as there is no-where any mention made of that, as I have ſaid above (*o*), in ſo many narrations; leſt you ſhould happen to think that this paſſage of Plutarch (*p*) may be ſuppos'd to refer thereto: " It was found that " Cleopatra had poiſon in a kind of hollow plate which ſhe conceal'd under " her hair;" and leſt you ſhould ſuſpect it to have been that, or ſimilar thereto, wherewith ſhe, having ſmear'd over the flowers of her banquetting garland, and thrown them ſoon after into a bowl, " had commanded a per- " ſon brought out of priſon to drink thereof, who inſtantly expir'd;" as you have it in Pliny (*q*); or of the ſame nature with that, which, not many *luſtra* after the death of that queen, was ſent from Alexandria to Jeruſalem to kill Herod; as Joſephus (*r*) has ſaid; that is, the virus of aſps, and the " poiſonous juices of other ſerpents," by the drinking of which poiſon " a " criminal capitally condemn'd died immediately;" leſt then, I ſay, you ſhould ſuſpect theſe things, I will not produce this paſſage from the ſame Pliny (*s*): that the poiſon of aſps, " when drunk in the largeſt quantity, is " not hurtful. For there is no contagious efficacy therein: ſo that the ani- " mals kill'd by the bite of this creature, are not improper for food;" which things agree with the experiments of Redi, and others, upon the viperine poiſon (*t*): nor will I ſay the other things in general, which I have hinted at in my ſecond letter to Lanciſi, from whence you may conjecture that this poiſon rather related to that wherewith Dio has ſaid the hair-needle, or bodkin, was beſmear'd; that is to ſay, one which was not injurious, as he openly aſſerted, except introduc'd into a wound.

I will only add one thing from the ſame Dio and Plutarch, from whence you may very clearly and inſtantly perceive, that Cleopatra did not die from

(*m*) l. 51. cit.
(*n*) Lett. int. alle Oppoſiz.
(*o*) n. 38. (*p*) Vita cit.
(*q*) Nat. Hiſt. l. 21. c. 3.
(*r*) De Bello Jud. l. 1.
(*s*) Nat. Hiſt. l. 29. c. 4. (*t*) ſupra, n. 30.

the

the taking of poiſon, which ſhe carried in a hollow plate under her hair.

For Dio (*u*) relates, as fact, that before ſhe kill'd herſelf, ſhe gave to Epaphroditus, to whom the cuſtody of her was committed, a letter to be carried to Auguſtus, that he "being remov'd from his poſt, under the pretence "of ſending a letter to Auguſtus, ſhe might have opportunity to execute "what ſhe had propos'd."

Plutarch (*x*) likewiſe had aſſerted without any doubt, that the queen, when about to kill herſelf, had given a letter to be carried to Auguſtus, "and having diſmiſſed all her attendants, but two women, had ſhut the "gate." To what purpoſe was it then, I pray you, that ſhe ſhould ſend away Epaphroditus, and the other attendants, from about her, and ſhut the gate, in order to take poiſon from that hollow plate?

She, therefore, muſt have intended to do ſomething elſe which ſhe could not do without the removal of all witneſſes, who would have prevented it: that is to ſay, ſhe intended "to handle fierce ſerpents, in order to drink the "black poiſon from them, by her body," as Horace (*y*) ſays, and not by her mouth.

And the teſtimony of this author I conſider as of very great weight, not only for other reaſons which I have hinted at in the letters ſent to Lanciſi; but, in particular, for this reaſon, that he, to uſe the words of the younger Pliny (*z*), "has follow'd the relations which were made of the fact imme-"diately after its tranſaction; at which time they have generally the moſt "truth in them."

45. Do you think, then, it was any-thing elſe but the handling of the aſps which Cleopatra could do, and perhaps did, when all her attendants were remov'd, in order to afford her an opportunity of killing herſelf with poiſon? When I had written thus far, I accidentally lit on a paſſage of a Greek author, and a cotemporary of Vellejus, which I think ſhould not be omitted in this controverſy.

For Strabo (*a*) has ſaid the following things: "Cleopatra kill'd herſelf "by applying, privately, the bite of an aſp; or with a poiſon ſmear'd over "her; for it is ſaid in both ways."

It appears, therefore, that, if ſhe was determin'd to anoint her body with this poiſon, ſhe ought to have ſhut the gate before, and kept no-body but her maids about her.

But before you ſay this, read Plutarch (*b*). You will ſee that, on this day, the queen, having made uſe of the bath, might have anointed her body with what ointment ſhe pleas'd, as the cuſtom was then, without any one being ſurpriz'd at it, or prohibiting it: that, after this, ſhe din'd, and magnificently too, (from whence you might draw a new argument, that, therefore, ſhe had not determin'd to kill herſelf ſoon after by ſwallowing or drinking down poiſon; as, by means of having made ſo many experiments, ſhe could not be ignorant how far food, previouſly taken in, may either prevent or

(*u*) L. cit. 51.
(*x*) Vita cit.
(*y*) Carm. l. 1. Od. 37.
(*z*) L. 6. Epiſt. 16.
(*a*) De ſitu Orbis, l. 17.
(*b*) Vita cit.

retard the effects of poiſon that is ſwallow'd (*c*)): that, while ſhe was at dinner, the box, full of grapes and figs, was brought in, together with the aſp; as ſhe ſeems previouſly to have order'd: and then, finally, that ſhe deliver'd the letters directed to Cæſar, and, all witneſſes being remov'd, ſhut the gate.

You therefore perceive, from this very ſeries of things, whether it is moſt probable that ſhe kill'd herſelf by a poiſonous ointment, or by an aſp.

Add to this, that Epaphroditus, who kept her ſo cautiouſly and attentively, as immediately "to take off the upper garment" of his priſoner, "leſt ſhe "ſhould have conceal'd any poiſon underneath;" as Plutarch has aſſerted above; would certainly not have left her boxes of ointment without a diligent examination and ſtrict enquiry: or, what was much more ready and ſafe, would have chang'd them for others fill'd with innocent ointments, of whatever price they might be; ſince Auguſtus had given this charge to him, "That he ſhould, above all things, take care ſhe might not have it in her "power to kill herſelf: but as to every thing elſe, that ſhe ſhould be quite "at her liberty."

One thing only, therefore, remains for you to conjecture; I mean, that there was but a little of that poiſonous ointment, ſo that it could "be "hid under the hair in that hollow plate" which has been ſpoken of above (*d*).

For thus, alſo, "in Martina; famous for the preparing of poiſons; who "died of a ſudden death at Brunduſium," while ſhe was brought to Rome as an accus'd perſon (as we read in Tacitus (*e*)); "poiſon was hid in the "knot of her hair, nor were any marks of the poiſon ſhe had taken found "upon her body."

Yet if you ſhould make this conjecture, the argument then returns that was brought above (*f*) in oppoſition to the opinion of thoſe who contended, that the poiſon wherewith Cleopatra had kill'd herſelf, by ſwallowing, was included in that plate.

For as a little ointment was not ſufficient to anoint the whole body all over, but only certain parts; as, for inſtance, the noſtrils, and other ſimilar parts; to what purpoſe was it to ſhut the gates or doors, in the mean time, and to remove all witneſſes, in order to do what ſhe might have done in the night, when ſhe appear'd to be aſleep: and that without the ſuſpicion of anyone?

And to this we might add a great number of other arguments, which it is not neceſſary to repeat, and which do not at all agree with the ſuppos'd ointment; but agree perfectly well with the bite of the aſp; as the application of the pſylli, the two punctures obſerv'd in the arm, and other things: among which are the very ancient ſtatues and images, whereto ſome reſpect muſt be paid; and, in particular, that which gave the firſt occaſion to the diſpute, in which the aſp is tied to the arm, in ſuch a manner as to ſeem to be irritated and provok'd to bite by the very conſtriction of the bandage.

(*c*) Vid. ſupra, n. 10.
(*d*) N. 44.
(*e*) Annal. l. 3.
(*f*) N. 44.

Nor

Nor let it ſtagger you that it has been objected hereto, that no-body dare tie an aſp to the arm of another, leſt the aſp ſhould bite the perſon who binds it rather than the other's arm. For what elſe did thoſe two ſervant-maids deſire, but to die by the ſame fate as their miſtreſs? following the example of the eunuch their colleague, who, as Dio (*g*) relates, "voluntarily expos'd himſelf to be bitten by ſerpents," as ſoon as ever the queen was taken priſoner.

And as to the other arguments; taken from the ſoft and timorous minds of women, or from the ſuppoſition of one aſp not being ſufficient to kill three women by its bite; and any other objections that might be drawn from Redi, or elſewhere; I think I have pretty well overcome them, either in the letters before publiſh'd, or in the preſent letter.

46. And thus far I had to add to thoſe ſame letters: not that you ſhould prefer what I have now written to the things ſaid on the contrary ſide of the queſtion by that illuſtrious man, and in an ingenious and learned manner; but that, by comparing both of the diſputations together, it might be the more eaſy for you to diſtinguiſh whether I have ſtood up for that part of the queſtion, in this controverſy, which, at leaſt, does not ſtand greatly wide of probability.

And although this point of itſelf is not of any great moment; yet, by reaſon of the ſeveral quotations that I have been under a neceſſity of making on account of it; not only from hiſtorical, but from medical authorities, and even from other ſources; it has, I hope, leſſen'd the irkſomeneſs of long reading to you, to whom it may be, perhaps, in ſome meaſure uſeful: or, at leaſt, it has alleviated to me this laſt labour of writing; ſo that I think myſelf at liberty to conclude my treatiſe to you on this ſubject almoſt in the ſame words as the author of the book *De Theriaca* (*h*), whom I have often commended, finiſhes his narration to Piſo upon the death of Cleopatra: "I have treated of this ſubject with a ſecret pleaſure of mind, that "I might be able to ſatisfy that deſire which you have after all learning." Farewel.

(*g*) L. 51. cit. (*h*) C. 8.

END of the FOURTH BOOK.

THE

THE

SEATS and CAUSES

OF

DISEASES

INVESTIGATED BY ANATOMY.

BOOK the FIFTH,

Wherein many Things are added by way of Supplement to the four preceding Books.

LETTER the SIXTIETH

Relates to the Apoplexy.

1. I THOUGHT I had already done more than was requiſite; and, as I did not ſcruple to ſay in the concluſion of my laſt letter, had put the finiſhing hand to my labour on theſe ſubjects.

But behold! your letter is come to hand, wherein you thank me in ſuch a manner as, at the ſame time, pretty plainly to ſhew that you expect thoſe obſervations of mine which it was impoſſible for me to inſert in their ſeveral proper places; as they have been made ſince the reſpective letters to which they belong were finiſh'd: and that this is very well underſtood by you, not only becauſe you know that I examine many different dead bodies every year, but alſo becauſe you have not receiv'd as yet ſome of the obſervations of this kind which I have now-and-then promis'd you as I was writing.

What can I ſay? You have certainly a right to inſiſt upon what you aſk; particularly from a man who, unleſs you would of your own accord releaſe him, is a very punctual obſerver of his promiſes.

I beg therefore, at leaſt, that you will receive theſe obſervations with the ſame candour that you have receiv'd the former: and I will add as many as I am able; beginning with diſorders of the brain, and in preference to others, with the moſt violent of them all, the apoplexy.

2. An old man had died apoplectic, in the hoſpital at Padua, about the beginning of December, in the year 1744; at which time I was there demonſtrating ſome parts of the human body, to the young gentlemen who ſtudied there.

I made a diligent enquiry into a number of circumſtances, according to my uſual cuſtom, but could learn no more than theſe; that having been ſeiz'd with an apoplexy, thirty days before, he was at length brought into that place, without any ſenſe or motion; his eyes being red to a very great degree.

While the aſſiſtants were cutting into the cranium, I happen'd to be looking upon the thoracic viſcera, which were juſt taken out; and in the upper part of the right lobe of the lungs, obſerv'd a hardneſs, ſuch as is wont to be left after an old diſeaſe. And therein was contain'd a ſmall tubercle, in which was a purulent matter.

The heart contain'd polypous concretions, and afforded no appearance worthy of remark; except that the aggeres, or tubercles, of the ſemilunar valves, were become very thick, and of a white colour.

Theſe viſcera being then remov'd, I, in the mean while, turn'd my hands and eyes to the laying open, and examination of the brain. And having taken off the exterior of the meninges, one difference appear'd betwixt the left and the right hemiſphere of the brain, which conſiſted in this; that the poſterior ſurface of the latter ſeem'd to be black, and very red in the middle.

The blackneſs was owing to the veſſels, which creep through the pia mater, being there diſtended with black blood, to a very great degree; and the redneſs was owing to blood, which, being extravaſated betwixt thoſe veſſels, as if by exſudation, ſeem'd to have occupied the ſpaces interpos'd to the veſſels, by a very thin kind of cruſt: or rather, as we could not in fact find any extravaſated blood there, it was owing to the blood ſtuffing up all thoſe ſmall veſſels, which lie ſo exceedingly thick in this membrane.

Then on opening the lateral ventricles, in both of them, equally, was ſeen a very bloody ſerum, to the quantity, perhaps, of one drachm, occupying only the anterior part; the plexus choroides, on both ſides, being pale, and the ſeptum lucidum entire.

The left hemiſphere alſo was ſound, both internally and externally; and every other part within the cranium was tolerably ſound, except the right hemiſphere alone.

For within the medullary ſubſtance of this hemiſphere was a cavity, which had almoſt a middle ſituation in reſpect to all the different regions of the hemiſphere; being at leaſt five inches long, two and a half in breadth, and as many in depth; very full of black blood, which was partly fluid, but partly, likewiſe, concreted into coagula.

And, this coagulated blood being taken away, the parietes of the cavity appear'd to be very diſagreeably lacerated, and unequal.

The ſubſtance which lay round about them was very lax: and not only that which made up the medullary part, but that which went to compoſe the external ſide of the whole corpus ſtriatum, and the whole thalamus nervi optici; and that, alſo, which made up ſome part of the neighbouring baſis of both thoſe protuberances.

3. As I have already explain'd to you, in a former letter (*a*), how a cavity of this kind ſeems to be form'd in the cerebrum; and how fatal it is when in the neighbourhood of thoſe protuberances; there is no occaſion to repeat the explication here.

You will rather aſk this queſtion of me; I mean, how it was poſſible for a man to live ſo long as thirty days, with ſo great a diſeaſe of the brain; and in ſuch a part? But do not imagine that this was the ſtate of the parts, from the firſt attack of the apoplexy.

It is much more probable, that a ſmall quantity of blood, diſtilling from ſome ſmall internal veſſel, which was ruptur'd, had then begun to prepare

(*a*) Epiſt. 3. n. 9. & 18.

that

that cavity for itſelf; and did not immediately enlarge it to that dilated ſtate wherein we found it: but that, moreover, by diſtilling gradually more and more, it had gradually, alſo, dilated the cavern to that extent, till a great number of the canals, through which the animal ſpirits circulate, being ruptur'd; and many other compreſs'd by the increas'd weight and bulk; it at length took away all external ſenſe and motion; and laſt of all the internal ſenſe and motion alſo; whereby death was brought on: or, you may conceive, as I ſhould more readily ſuppoſe, that, a new impulſe being added from ſome cauſe or other, and many ſmall veſſels being broken at the ſame time, theſe laſt effects, which I have mention'd, were brought on by a ſudden and large eruption, not a very long time before.

But in whichſoever of theſe two modes you chuſe to explain the diſorder, it will be very eaſy for you, not only to ſolve your own enquiry, but alſo to underſtand clearly, how uſeful it may be, when certain ſymptoms, which threaten a ſanguineous apoplexy, firſt exiſt, to diminiſh the quantity of aliments; eſpecially thoſe that abound with acrid and thin particles; to abſtain from too great motions of the mind and body, and to draw away blood; and where ſuch an apoplexy has already come on, ſo much the more to diminiſh its quantity, and, as I think I have written to you before, to avoid ſuch remedies as may too much move and agitate, in an untimely manner; thoſe remedies, for inſtance, that are pregnant with volatile corpuſcles; that produce vomiting, ſneezing, and other effects of that nature.

4. A huſbandman, of a middle age, and rather fat, was brought into the ſame hoſpital, in the year 1748, when I was teaching anatomy there; he having been ſeiz'd with an apoplexy, which was ſaid to be the third, and was, in fact, ſo violent, that being immediately taken into the hoſpital, from the road wherein he had fallen down, not far from the hoſpital, he had already a ſtertor, and was paralytic in his whole body; ſo as not to give the leaſt ſign of ſenſe or motion in any part: and his pulſe being very ſmall, ſo that they did not dare to take any blood away, he died within ſeven or eight hours.

On the fourth day after, all theſe circumſtances were related to me; and, at the ſame time, the body was offer'd for diſſection.

But before I would touch the carcaſe, I enquir'd, though to no purpoſe, at what time, with what preceding cauſes, with what concomitant ſigns, or remaining injuries, thoſe two foregoing apoplexies, which were mention'd, had been obſerv'd; or what marks of diſeaſe they had left behind them: for I could learn nothing in reſpect to them, and of this laſt only what I have mention'd.

However, when I ſaw that the veſſels about the head were turgid, and heard that there had been ſo violent an apoplexy, in a body rather fat; I made no ſcruple to ſay, to a very crowded circle of ſtudents, that it would be ſurprizing if I did not ſhew this to have been from a ſanguineous cauſe.

The ſkull, therefore, being immeniately open'd; when this was done, and ſtill more when the brain was taken out; a conſiderable quantity of black blood flow'd down: and it was even evident, that it flow'd out from the infundibulum.

The ſame kind of blood had not only diſtended all the veſſels that paſs'd through the pia mater, where it inveſted the cerebrum and cerebellum, but alſo under this membrane, in the middle of the left hemiſphere, a ſmall quantity was extravaſated: and a great quantity in all the ventricles.

For as to the lateral ventricles; beſides a coagulum, which ſeem'd to be equal to two, not to ſay three, ounces in weight; almoſt all the remaining part of thoſe ventricles, and, moreover, the third and fourth ventricle, were occupied thereby.

When I came to enquire from whence it had been diſcharg'd, I found the caſe as follows. The poſterior ſurface of the left ventricle, and of the thalamus therein, that is, the thalamus nervi optici, diſcover'd laceration by their inequality: and this was ſtill much more apparent from the ſurface of the right ventricle; inaſmuch as it was not only every where unequal, but, moreover, preſerv'd ſcarcely any traces of its thalamus, and none at all of the corpus ſtriatum; the ſeat of which was poſſeſs'd by a kind of lurid ſubſtance, of a colour that conſiſted of a ſomewhat red and yellowiſh hue, mix'd together as it were: being quite corrupted, but without any very diſagreeable ſmell.

The cavity of both the ventricles was enlarg'd; the ſeptum lucidum was broken through; there was no trace of the formix remaining; ſcarcely any of the plexus choroides, and that of the left only; the veſſels being not turgid, but pale.

This, however, could not be at all conſider'd as ſurprizing, where there had been ſo great a quantity of blood extravaſated as I have ſaid; and where ſo large a coagulum had been form'd from thence, as that which had occupied the right and the left part of the cavity; but the latter more than the former.

By reaſon of that conſiderable effuſion of blood therefore, I did not wonder even at this circumſtance; I mean, that the ſides of the third ventricle did not appear ſo perſpicuouſly, whether they had ſubſided from compreſſion, or from diſtraction, or even from laceration; for the neighbouring ſurface alſo of the nates, and teſtes, was ſo lacerated, that theſe protuberances could not be diſtinguiſh'd.

To theſe preternatural appearances, which were ſeen in the head, two remain to be added; to wit, that the left vertebral artery was ſomewhat hard, thick, and white, in one half of it, before it open'd into the baſilary artery: and that the greater part of the poſterior and inferior dentes molares, were either become mere ſtumps, and black even in their very roots; as was the caſe on the right ſide; or had quite fallen out; as on the left ſide; and that not a very ſhort time before: for there did not remain the leaſt traces of ſockets; and even the bony body of the maxilla had already contracted itſelf in that part, and ſubſided.

And, not to disjoin from the head its bony fulcrum, and the cavity of the cranium which is produc'd thereinto; when I examin'd all the vertebræ of the neck, and many of the thorax, and inſpected the included ſpinal marrow, I ſaw betwixt this and the pia mater, as it is call'd, at leaſt in the ſuperior vertebræ of the thorax, blood extravaſated in a conſiderable quantity; and this on the poſterior ſurface; and on the ſame ſurface the pia mater had

had ſo much red mix'd with a fleſh colour, that you could not diſtinguiſh any blood-veſſel therein, from the head almoſt to the middle of the thorax: whereas, on the anterior ſurface, the artery which paſs'd ſingly through the middle, was ſeen to be diſtended with blood.

And even the dura mater, where it inveſted the internal ſides of the vertebræ, was, in a manner, black from ſtagnating blood.

The thorax; which, as well as ſome of the parts before ſpoken of, I examin'd on the following days; contain'd a heart, which, in proportion to the man, who was pretty fat, was not at all fat; but, together with a ſmall quantity of black and coagulated blood, contain'd a few ſmall polypous concretions: yet thoſe in the right ventricle were ſomewhat the largeſt; ſo that one of them enter'd into the pulmonary artery.

The ſubſtance of the heart was very lax. The coronary vein, where it goes round the baſis of the heart, on the poſterior part, was wider than it naturally is: the pulmonary artery itſelf indeed was not wider than it naturally is; but was ſeen to have very thin parietes, and thin valves alſo: but the left ſinus of the heart, where it receiv'd the venous branches from the lungs, was very much enlarg'd.

The lower edge of one of the valvulæ mitrales was thicken'd to a conſiderable degree: and bony concretions, not of a large ſize, but pretty thick, had been form'd upon the aggeres, or tubercles, of the ſemilunar valves.

Yet the great artery itſelf was ſound, quite to that part from whence it ſent forth the left ſubclavian. But from thence it began to ſhow white ſpots, pretty frequently, on its internal ſurface, and particularly on its poſterior ſurface: ſome of which, and eſpecially the firſt, had degenerated into a bony ſcale.

That firſt anſwer'd to the canalis arterioſus, which formerly open'd there; but was now according to cuſtom ſhut up; except that in this man, by way of rare inſtance, I ſaw the orifice of that canal gaping in the pulmonary artery, from whence it begins; ſo that I could introduce a probe to the extent of half a line of Bologna.

In the belly I obſerv'd the following preternatural appearances. The ſurface of both kidnies was in a manner tuberous; but in a ſlight degree: that one of them, moreover, had ſubſided in a certain place; which place was circumſcrib'd by the circumference of a circle, the diameter of which was equal to an inch: the ſubſtance of the kidney beneath was ſomewhat hard in that part, but only to an inconſiderable depth.

Both the iliac arteries were tortuous: and, to ſpeak thus, varicoſe, almoſt like the ſplenic artery: in the left I ſaw a bony lamella. The other parts that I examin'd in this body were in a natural ſtate.

5. From whence ſo great a quantity of blood had, for the chief part, burſt into the lateral ventricles of the brain, is ſhown by the almoſt univerſal deſtruction of the plexus choroides; the veſſels whereof had probably been ruptur'd ſuddenly, here and there, after having been conſiderably dilated.

I ſaid for the chief part; for it muſt have been that other veſſels alſo, which paſs through the ſurfaces of the lateral ventricles, were lacerated likewiſe,

wiſe, in the laceration of theſe ventricles; which was effected not only by the impetus, but alſo by the diſtracting quantity of the blood, flowing out from the plexuſſes.

But it is probable, that the greater part of the blood had come out of the veſſels on the right ſide; for on the right ſide, we ſaw all the ſurfaces lacerated, and the whole plexus conſum'd.

Nor would I have you think it unfavourable to ſuch a ſuppoſition, that this large coagulum of blood was more on the left ſide than the right; ſince I apprehend the very contrary.

For as the firſt, and larger, reſolution is generally brought on, in the ſide of the body which is oppos'd to the moſt injur'd hemiſphere of the brain; it is very natural to ſuppoſe that the man fell down towards the left ſide (*b*); and that, for this reaſon, the larger quantity of blood had flow'd from the right ventricle into the left, through the rupture of the ſeptum lucidum.

And that he fell on the left ſide, appears alſo from this circumſtance, that the blood effus'd under the pia mater was in a part of the left hemiſphere, and not in the right.

And of the right there was the greateſt injury in this reſpect alſo, that inſtead of the corpus ſtriatum, it had a mucous ſubſtance. A change of which kind in the ſubſtance of the brain, I have already told you (*c*), I had found more than once.

But as to the queſtion whether the apoplexies, two of which had preceded, had in part been the cauſe of this change; or whether the dilatation of the veſſels, or ſome certain parts of the brain, being render'd more lax, were the effects of thoſe apoplexies; as we cannot certainly determine it; it is better to paſs on to the third hiſtory of the ſanguineous apoplexy.

6. A fat woman, of eighty-five years of age, who, as far back as her acquaintance could remember, had been always lame; and who, having been formerly married, had brought forth twenty children; had been ſeiz'd with an apoplectic paroxyſm; firſt in the laſt ſummer, and with a ſecond, ten days before ſhe was carried off by the third.

All of theſe paroxyſms began in the ſame way, and had a vomiting precede them. But the two firſt were ſolv'd in a ſhort time, without any remedies; and without leaving any paralyſis behind. Yet this laſt of the attacks, carried her off within fourteen hours; ſhe being brought into the hoſpital without any ſenſe or motion; if you except the reſpiration and the pulſe; the latter of which was without any diſorder, and reſiſted the fingers when preſs'd upon it: and the reſpiration rais'd up the cheſt and the belly alternately, without any ſtertor.

On the firſt of February, in the year 1754, when I had already demonſtrated almoſt all the abdominal viſcera from another ſubject; I afterwards began to make uſe of this, in order to finiſh the anatomical demonſtrations.

In the belly, I obſerv'd theſe preternatural appearances. The trunks of the large veſſels both ſeem'd to be wider than natural; eſpecially as it was in a woman. And if you aſcribe this to the number of utero-geſtations; yet

(*b*) Vid. Epiſt. 2. n. 25. & Epiſt. 3. n. 14. (*c*) Epiſt. 9. n. 16. & ſeqq.

you

you certainly will not refer thereto the beginnings of offification; and even the bony ſcales; wherewith the aorta, and the iliacs, that ariſe from thence, and the two branches into which each of theſe iliacs are divided, were diſtinguiſh'd here and there, on their internal ſurface.

And if we ſay theſe appearances were the effects of age; we ſhall ſay that the diſeaſe is a diſeaſe of old age.

But certainly, that diſorder form'd upon the left kidney, which I remember to have promis'd you, heretofore (*d*), the explanation of, in the hiſtory of a certain old woman, who was the preſent, was neither the effect of old age, nor of utero-geſtation.

That kidney might ſeem, at firſt ſight, to be immoderately long. But fixing the eyes a little more attentively, we could ſee water within it, which, by being confin'd there, increas'd its length.

The judgment of the eyes was confirm'd by the touch; and ſtill more by the diſſection ſoon after. For by cutting into the kidney, a yellowiſh water was diſcharg'd; which, when receiv'd in a veſſel, ſeem'd to all who were preſent, to be equal to the weight of four ounces.

This water having been under the proper coat of the kidney, where it inveſts the upper extremity of that viſcus, had expanded it upwards in that manner; ſo as to form the appearance of a produc'd kidney. The expanded coat was become much thicken'd, and had, internally, the appearance of protuberating plicæ, or folds; and a kind of firm bands, but irregularly plac'd.

Both of the teſtes had ſpherules almoſt of the diameter of a double line of Bologna; internally hollow, but quite empty; the parietes of which, being of a white colour, both internally and externally, were pretty thick; and ſo firm, that in one ſpherule in particular, which protuberated outwards, they ſeem'd bony: although they were in fact only of a middle firmneſs betwixt that of a cartilage and that of a nerve.

In the thorax the lungs were found to be ſound; notwithſtanding the right lobe adher'd to the ſide, and in the bronchiæ was a great quantity of thick, though at the ſame time ſufficiently fluid, matter.

In the heart every thing was natural; if you except one of the ſemilunar valves, a part of the upper border of which, near to the *agger* or tubercle, was already almoſt bony. Yet ſome neighbouring part of the great artery; for the other part which is in the thorax I did not diſſect; had nothing at all bony.

The centrum nerveum, or tendineum, of the diaphragm, as it is call'd, had neither the figure it generally has, nor the ſize; and it was pierc'd thro', not with one foramen, but with three: this appearance, however, I have ſeen before (*e*), and that more than once; two of the leſſer foramina, for inſtance, which were contiguous to the larger, being form'd for the tranſmitting of two veins from the liver; but if theſe veins had open'd into the trunk of the cava below the diaphragm, as they generally do; and not above it, as they did in this caſe; there would not have been three foramina in that tendon, but one only.

(*d*) Epiſt. 38. n. 41. (*e*) Epiſt. 5. n. 9.

The upper limbs alſo had ſomething peculiar in them. For having obſerv'd the longus palmaris muſcle, in the right arm, not to be thick and fleſhy, as it generally is at its origin, but to be thin and ſlender even there, and almoſt tendinous; and ſeeing the ſame muſcle, when laid bare in the left hand, to be twice as thick as the right; having a greater quantity of fleſh, and this going much farther down; and ſuſpecting what was the effect of this difference, and what in part had been the cauſe; I order'd ſomebody to make enquiry, from the acquaintance of the old woman, whether ſhe had been accuſtom'd to uſe her left hand inſtead of her right: and I was aſſur'd that this had really been the caſe.

However, to this queſtion relate, ſtill more, the appearances which I found in the lower limbs of this lame woman. She had been lame on the right ſide: nor could the cauſe be referr'd to luxation, as there was none at all; nor to the acetabula; as, when compar'd one with another, they ſhow'd no difference, either in their ſituation, their poſition, or their depth.

But if you compar'd the bones of the thighs one with another, there appear'd an evident difference betwixt both; from whence you might conceive, that the right limb muſt, of courſe, be ſhorter than the left, as it really was.

For the os femoris on the right ſide, was ſo much ſhorter than the left, that, if you plac'd them both near to each other, the upper part of the head of the former correſponded to the lower part of the latter. And the cauſe of this ſhortneſs was the greater incurvation of the former than of the latter; which was extremely manifeſt.

Nor were other appearances of diſeaſe wanting, in that bone, beſides theſe; as, for inſtance, the diminiſh'd breadth of the head at the lower part, no ſinking in of the bone, betwixt the great trochanter and the cervix; and both theſe parts were thicker than they naturally are: ſo that if the woman was ever thin, this thickneſs might have deceiv'd any ſurgeon, who examin'd the bone, under the appearance of a luxation.

That os femoris was, in like manner, thicker than it naturally is, from the cervix to at leaſt the middle of its length; and had the convex part of the curvature turn'd towards the external ſide: and conſequently the poſterior ſurface of its condyles look'd towards the left femur; ſo that the leg alſo, and the foot, could not be in their proper ſituation.

In attending to all which circumſtances; you will readily perceive, that theſe diſorders, of the lower limb, had exiſted from the original formation; or at leaſt from the time of infancy: and therefore, that it was not ſurprizing the woman had always been lame.

At length the head (on the account of which chiefly, I deſcrib'd this diſſection to you) was open'd: and the dura mater being remov'd, we ſaw the veſſels that paſs through the pia mater indeed to be diſtended with blood; but no blood, nor ſerum, was found to be effus'd any where, till we came to the left ventricle, by cutting into the left hemiſphere of the cerebrum, the ſubſtance of which was firm.

For then a bloody ſerum began to be diſcharg'd, and not in a ſmall quantity; that is to ſay, it came from a large quantity of blood, which had coagulated in that ventricle. The ſame kind of ſerum was alſo found in the

right

right ventricle, and in the *iter ad quartum ventriculum*, as it is call'd; but we did not find any injury from whence we could, for a certainty, ſay, that the blood ſeem'd to have been diſcharg'd: although I ſuppoſe it to have lain hid in the left ventricle.

Then transferring the knife, from thence, to the cerebellum; which appear'd to be every where ſound on its external ſurface; behold, within its right lobe, we found a cavity, and not a ſmall one, which was very full of blood form'd into coagula.

7. Enough was ſaid juſt now of the cauſes of the lameneſs I have ſpoken of. In regard to other things I have already treated of them (*f*), and ſhall treat hereafter (*g*). But in regard to the two apoplexies which had preceded this laſt, it is to be ſuppos'd, that both of them had left ſuch diſpoſitions in the cerebrum and cerebellum, as prepar'd a more eaſy acceſs for the third; ſo that, by rupturing the internal veſſels, it carried off the woman: and this the more eaſily, as no remedies had been made uſe of.

And ſince veſſels were ruptur'd not only within the cerebellum, but within the cerebrum alſo; as the blood extravaſated in both ſeems to ſhow; they have therefore render'd two things, which might have been deduc'd from this diſſection, in relation to the cerebellum, uncertain and doubtful; I mean, whether an injury of one of its lobes is follow'd by a paralyſis in the oppoſite ſide of the body; and in like manner, whether the pulſe and reſpiration depend upon the cerebellum.

For, what if that cavity in the cerebellum were only produc'd by the force of the blood, when death was coming on? Or what if the reſolution which was on both ſides, were to be accounted for, from the blood extravaſated into both the lateral ventricles of the cerebrum?

However, an obſervation of mine, which I ſhall write to you (*h*) at another time, will afford me an occaſion of treating upon both theſe queſtions more clearly.

But now leſt you ſhould imagine, that the ſanguineous apoplexy, which kills very ſpeedily, cannot exiſt without a rupture of the veſſels; we will immediately ſubjoin to the three which are propos'd with this rupture, as many which have been fatal very ſoon; or at leaſt in not a very long time; without this effect.

8. A man, to appearance of forty years of age, having come from Milan to Padua on foot, before the end of January of the year 1756, was ſo wearied with his journey, that he went immediately to the hoſpital; into which he was receiv'd, merely on account of his wearineſs, and not for any fever: and while he was ſitting there ſtill out of bed, and taking food, he was ſuddenly ſtruck with a violent apoplexy, without any mark of external ſenſe or motion; and though blood-lettings were made uſe of, yet they ſeem'd to be injurious rather than uſeful; and he died within two days.

The body was given us, in order to purſue the public demonſtrations of

(*f*) Epiſt. 56. paſſim.
(*g*) Epiſt. 69. n. 2. 10. & ſeqq.
(*h*) Epiſt. 62. n. 15.

anatomy. And while we were doing this, before the time of opening the ſkull came on, I obſerv'd theſe few things.

In the belly, the gall-bladder was turgid with bile.

In the thorax, the figure of the heart was ſuch as I do not remember ever to have ſeen in a human body at any other time; and reſembled that which we ſee form'd by the moſt unſkilful painters; as if the right ſide of the heart were finiſh'd by a curv'd line: that is to ſay, the upper part of the baſis and the lower part of the apex were prominent towards the right ſide. And indeed the ſeptum of the heart itſelf follow'd the ſame unuſual curvature.

The heart was rather ſmall than large; but had its valves, and other parts of that kind, ſmall, even below this proportion. The great artery, after having ſent out the left ſubclavian, was rough to ſome extent internally, by reaſon of prominent fibres; as if the internal coat were wanting.

At length having remov'd the upper part of the cranium and dura mater, we ſaw the veſſels of the pia mater, indeed, to be very much diſtended with blood; as we alſo did thoſe very ſmall veſſels, that paſs ſo plentifully thro' the medullary ſubſtance of the brain; but we could no where find any extravaſated blood; notwithſtanding what ſerum was contain'd in the lateral ventricles, the quantity whereof was not ſmall, we ſaw to be bloody: and notwithſtanding in the plexus choroides, where they are inflected in the termination of their aſcent, ſmall hydatids were ſeen; but particularly in one of theſe plexuſſes.

9. Theſe hydatids we have been wont to ſee there frequently, and equally, in others who have not been carried off by an apoplexy: and as to the ſerum, it can ſcarcely happen, but that, while we cut into the brain; whoſe crowded veſſels are diſtended with blood; it muſt appear bloody, even from a very few drops of blood being mix'd therewith.

And if you ſhould chooſe to ſuppoſe, that this apoplexy was in part owing either to the acrimonious and irritating property of the ſerum, or to the quantity of it, though not large, encreaſing the compreſſions of the brain; according to what I have formerly written to you (*i*) in treating of ſerous apoplexies; I ſhall not conteſt your opinion: for it is ſometimes difficult to ſeparate the ſanguineous apoplexies from the ſerous; and to determine, in regard to ſome particular hiſtories, to which ſpecies they certainly belong.

Yet I would have you previouſly well conſider the conjectures which may be advanc'd on both ſides; and where the external and internal veſſels of the cerebrum are both very greatly diſtended with blood, at the ſame time; as in the man in queſtion; take care how you too eaſily deny, that the cauſe is, in chief part, to be deduc'd from the blood.

But whether to that great laſſitude, following the fatigue of a long journey perform'd at ſuch a time of year, any thing might be contributed by the conſtitution of the man; which that unuſual figure of the heart, and that internal injury of the aorta, probably ſhow not to have been the moſt robuſt; I leave quite undetermin'd: yet that laſſitude diminiſhes the ſtrength of the whole body, and of the brain alſo, and its veſſels; and therefore makes the brain more liable to compreſſions, and the veſſels to diſtenſions; I have not the leaſt occaſion to doubt.

(*i*) Epiſt. 4.

10. A woman,

10. A woman, nearly of the ſame age as that man, being receiv'd into the hoſpital not many days after him, was brought from thence, (where ſhe died) within two days, into the anatomical theatre.

The cauſe of her death had been an apoplexy of ſuch a kind, that, on the fourth day from the beginnning thereof, when ſhe was brought into the hoſpital, ſhe then, at leaſt, retain'd no ſign of any remaining power of feeling or motion; and ſcarcely open'd her eyes, while red-hot plates of iron were applied to the ſoles of her feet, in order to excite her; but in vain; for ſhe ſoon after ſhut them again.

The carcaſe, if you excepted one leg that was disfigur'd with an ulcer, had no appearance externally, that made it unfit for the uſe of teaching: and even internally, in thoſe parts that I examin'd, I found very few things differing from the uſual and regular appearance of nature.

For in the trunk of the aorta, where it goes down through the belly, were ſlight internal whiteneſſes in ſome places; which were the beginnings of future bony ſcales: one of which, though ſmall, was already form'd.

The left Falloppian tube adher'd to the teſtis in the middle of its courſe: this teſtis was but ſmall, if compar'd with the right, and had a few white globules within; in diſſecting one of which I ſaw it to be made up of a compact ſubſtance, hollow in the center.

But the right teſtis, which, in magnitude, would have been ſuitable even to a younger ſubject, contain'd no globules, and no veſicles; yet was of a tuberous ſurface; and if you fix'd your eyes attentively down, was not without marks of ſmall cicatrices.

It was alſo obſerv'd, in the diſſection of this carcaſe, that the membranes gave more reſiſtance to the ſcalpel, than they naturally do; although fat was not wanting.

Finally, upon opening the cranium, all the veſſels within this cavity, not excepting even the *plexus choroides*, were found to be turgid with blood. But ſetting aſide a little quantity of water in the lateral ventricles, I could not find any diſeas'd appearance in the cerebrum, cerebellum, or medulla oblongata, whereſoever I cut into their ſubſtances.

11. If you ſhould chuſe to compare together all the appearances that had been ſeen in the living bodies, or in the bodies after death; I imagine you will not very greatly be ſurpriz'd, that this woman died later than the man of whom we ſpoke before; and ſtill much later both of them than another man of whom I ſhall ſpeak immediately.

12. A barber of five-and-fifty years of age, whoſe head was in great meaſure bald; and who drank to ſo great a degree, as to be brought home drunk, on the eve of the 16th of January, in the year 1757, was found dead the next day in the morning, lying on the ground betwixt the bed and the wall, near to a broken chamber-pot; but without any injury being done to any part of his body.

As I made uſe of this body to begin the public demonſtrations in anatomy that year, I obſerv'd theſe things that were preternatural.

The belly being open'd, a large ſtomach came into ſight; the internal ſurface of which was ting'd with the colour of wine. The omentum was fill'd with a great quantity of fat, as the external coat of moſt of the inteſtines

was, and the meſentery alſo; in which ſome glands were of a larger ſize than that age generally exhibits.

The bile, which was of a yellow colour degenerating into brown, had left, on the internal ſurface of the cyſt, many white granules of ſand, as it were; but ſuch as, when rubb'd betwixt the fingers, were not at all hard.

The ſurface of the kidnies, one of which was longer than the other, was not without ſome traces of diſorder; among which was a ſmall cavity under the coat, that was full of moiſture.

The bladder was ſo diſtended with urine, that the upper part of it was higher than the bones of the pubes; and that conſiderably too. And as it is to be ſuppos'd, that it had alſo been often immoderately expanded in the living body, ſo it was not ſurprizing that the form of it was uncommon: for, although, at the lower part, it was ſomewhat broader than at the upper; yet at firſt ſight it reſembled a cylinder, or a priſm, rather than any other figure.

The urethra was every-where white internally; and not only furniſh'd with fewer and ſmaller orifices of our canaliculi, but moreover had the ſeminal caruncle almoſt obliterated, as it were; ſo that in this urethra nothing could be clearly demonſtrated: and as the roſtrum of the caput galinaginis was quite wanting beſides, it was natural to ſuppoſe, that neither the caruncle, nor the other part of the urethra, had been formerly free from a greater diſorder.

The internal ſurface of the great artery, where it runs down upon the vertebræ of the loins, ſhew'd the beginnings of oſſification: and the iliacs had bony lamellæ perfectly form'd; which were ſo much the harder, the more they approach'd to the lower parts, after being divided into the external and internal veſſels; ſo that the crural arteries, in ſeveral places, and even when receiv'd betwixt the condyles of the femur in the ham, were hard, and rigid: and the arteries ſeem'd to be the more ſubject to this diſorder, the farther they became remov'd from the heart.

And above the belly, at leaſt, where the aorta ſent forth the inferior intercoſtals, appear'd the beginnings of oſſifications; but theſe were quite ſlight. Beſides which I obſerv'd no other diſorders in the thorax, nor in the reſt of the body; if you except what I am about to mention.

For the upper part of the cranium, and the external of the meninges, being taken away; both of which parts were pretty thick, ſo that the latter, where it is interpos'd betwixt the cerebellum and the cerebrum, reſiſted the ſcalpel more than it generally does; though I examin'd all the appearances, and paſs'd over none of thoſe parts that are within the ſkull without diſſection; I not only did not find any extravaſation of blood, or ſerum, but not the leaſt diſorder, beſides that which I ſhall mention.

That is to ſay, the veſſels which paſs through the pia mater were ſo fill'd with blood, and ſo dilated thereby, that I never remember to have ſeen them more ſo. Thoſe alſo which make up the plexus choroides, and which are carried through the parietes of the lateral ventricles, (where there was a little water) were diſtended: and on the left ſide particularly.

13. I would have you compare this obſervation with that which I made upon

upon Peter Faſolati (*k*). You will find many circumſtances in both of them, which agree with one another; and many, likewiſe, in the remarks I made thereon, in order to explain it; which, therefore, I need not repeat here. Yet we may add ſome things which are peculiar to this man.

This man had been a drinker, and of courſe frequently intoxicated: and how much drunkenneſs tends to increaſe the quantity of the blood, and to weaken the veſſels which are within the cranium, you eaſily conceive.

Add to this thoſe oſſifications in the inferior arteries; which, as they prevented the motion of the blood downwards, forc'd it, in like manner, to be carried upwards in a greater quantity.

But this alſo muſt in particular be added, that when the man lay under the effects of that laſt very great drunkenneſs, and ſlept, a great quantity of what he had taken in began to be added to his former quantity of blood; particularly the wine; and when the bladder had receiv'd ſo much of it, as not to be able to admit any more, and yet the man; in conſequence of being oppreſs'd by his drunkenneſs and ſleep; did not perceive the neceſſity of unloading his bladder, by which means he would have prepar'd a freſh receptacle therein for the remaining matter of urine; which was in the mean while carried into the general channel of the circulation; when this, I ſay, was the ſtate of the caſe, it muſt have happen'd, that the veſſels were more and more diſtended, from this retain'd matter, and thoſe in particular that are within the ſkull, (as they had already, for a long time, been weaken'd) and particularly in the poſture of lying down; wherein they were more ſubject to repletion.

See how Lower (*l*) explains, almoſt in the ſame manner, violent diſorders of the brain, which had occurr'd to him, (and among theſe, in particular, the apoplexy) that have ariſen from lying down, and ſleeping, immediately after drinking largely; and before the greateſt quantity of the liquor, that has been drunk, has been diſcharg'd by the bladder.

14. I ſuppoſe therefore, that the man of whom I have given the hiſtory, having perceiv'd the fullneſs of his bladder when it was too late; and having attempted to take hold of, or rather having actually laid hold of, the chamber-pot, and endeavour'd to diſcharge the urine from his over-diſtended bladder, which is not a very eaſy taſk; had fallen down in a very violently apoplexy, in that very niſus, which retains a greater quantity of blood in the veſſels of the brain.

For the external and internal veſſels, that are within the ſkull, might, at length, have come to ſuch a degree of diſtention, as vehemently to compreſs whatever is contain'd in the cranium.

But becauſe both in theſe and other letters, the cauſe of the apoplexy has often been deduc'd from compreſſions of this kind; be cautious how you ſuſpect that the experiments of the celebrated Laghius (*m*) are contrary to this explication; in which experiments, by means of that truly elegant inſtrument, invented by the very noble, and, at the ſame time, very ingenious count Gregory Caſali, he ſhews that, in dogs, the brain may be compreſs'd

(*k*) Epiſt. 3. n. 26. (*l*) Tract. de Corde, c. 2. (*m*) De Senſibilit. &c. Serm. 2.

to

to at leaſt ſix lines of London, without any ſign of uneaſineſs in them: and indeed, that when they do begin to complain, they ſoon after grow quiet, unleſs the compreſſion be increas'd: and that they do not fall down as ſeiz'd with an apoplexy, before the degree of compreſſion amounts to about an inch.

For this compreſſion is a very different thing from what we are now ſpeaking of; ſince the former is applied only to a part of the brain, and that a very ſmall part; but ours, of which the queſtion is in this man, is applied all round about; and even internally in every part; to the cerebrum, the cerebellum, and the medulla oblongata, at the ſame time.

But if it was not of that kind in others at any time; yet we have ſtill added other circumſtances, and have ſuppos'd it to take place in a cranium every-where ſhut up, at leaſt, and reſiſting; and not open in any part: although that woman, of whom Poupart preſented a memoir to the Royal Academy of Sciences at Paris (*n*), had half the ſkull deficient; and yet when any-one touch'd the dura mater ſlightly with the point of his finger, ſuch an uneaſineſs was brought on, that a thouſand little torches ſeem'd to be flying about before her eyes, and ſhe was oblig'd to cry out exceedingly.

But I would have you conſider thoſe experiments, as far as the matter concerns me; and make uſe of them, in order to allow, without any ſurprize or admiration, not only other things, but in particular this; that the brain may be capable of enduring a certain degree of compreſſion, without any uneaſineſs: and that it can accuſtom itſelf thereto, when increas'd gradually ſo as to be troubleſome; provided it does not increaſe beyond that point; till at length ſuch a degree of preſſure be finally added, as muſt neceſſarily overcome and deſtroy the animal.

15. Thus far (for other obſervations, relative to this diſeaſe, it will be better to delay the deſcription of, till we come upon the ſubject of the hemiplexia (*o*), and the aphonia (*p*); thus far, I ſay, of the apoplexy. From which we ſhall go on, preſently, to other diſorders of the brain. Farewel.

LETTER the SIXTY-FIRST

Relates to thoſe Deliria which happen without any Fever.

1. THAT diſorder of the brain, whereof I wrote to you lately, is certainly a violent one; I mean the apoplexy. But violent alſo, and indeed ſtill more pitiable, is that of which we are now about to ſpeak; I

(*n*) Hiſt. A. 1700. Obſ. Anat. 20. (*o*) Epiſt. 62. n. 7. 9. 11. (*p*) Epiſt. 63. n. 13.

mean

mean madneſs, or delirium without a fever. I have as yet three diſſections relative thereto.

2. A woman affected in her ſenſes, to all appearance of a middle age, after various misfortunes, died in this hoſpital; and in the beginning of the year 1746.

Leſt I ſhould be in great ſtreights to get bodies, in order to finiſh the anatomical demonſtrations to the pupils there; I enquir'd whether this body would be proper for that purpoſe.

Having heard that, by reaſon of its being greatly emaciated, and, in like manner, by reaſon of a very large and fœtid gangrene on the os ſacrum, the thorax and the head were the only parts proper for my intentions; I order'd all the others to be buried, and only the head, together with the thorax, if this were without any purulency, which the extremely emaciated ſtate made me ſuſpect the exiſtence of, to be preſerv'd.

The thorax therefore being open'd, and my ſuſpicion appearing not to be a vain one; ſince one lobe of the lungs was, in great meaſure, full of pus; I order'd theſe viſcera likewiſe to be buried; and began the diſſection of the head.

The cranium being open'd, this one thing was obſerv'd in the meninges; that the pia mater, though but ſlightly laid hold of, and drawn, very eaſily follow'd, and came out from the convolutions of the brain.

There was no doubt, then, but water was beneath; a quantity of which was found even in the ventricles: but a larger quantity had flow'd out from the tube of the vertebræ. And yet the ſubſtances both of the cerebrum and cerebellum were, beyond the leaſt diſpute, more hard than they uſually are.

The plexus choroides I indeed ſaw to be diſcolour'd; but where they lie upon the chink, or fiſſure, of the third ventricle, they were ſo firmly conjoin'd, by their ſmall veſſels, with its edges, that the fiſſure did not open at all, till after thoſe veſſels were accurately diſunited.

Beſides theſe things, nothing worthy of remark occurr'd, except the pineal gland; which ſeem'd to be larger than uſual, and annex'd to its ſeat by longer medullary radicles: and at the ſame time was more of a mucous nature than uſual.

3. As I have treated of perſons affected in their ſenſes heretofore, you may remember what diſeaſes I took notice of (*a*) in them, as obſerv'd by others, and particularly by me, in relation to the pineal gland: and theſe I have not been ſilent upon even in another letter (*b*).

Since that time has come out the *Proluſio* (*c*) of Juſtus Godofredus Gunzius, which I could wiſh had been then publiſh'd.

For as he was a man of great erudition, he has quoted moſt of thoſe authors who have made mention of the diſorders of this gland; and by that means would have leſſen'd my labour, ſuch as it was, in producing theſe authors: and that either as to what relates to perſons that are inſane, or as

(*a*) Epiſt. 8. n. 14. & 16.
(*b*) Ut 59. n. 15.
(*c*) De Lapillis Gland. Pineal. in quinque mente alienat. invent.

to what, in general, relates to thoſe who have had little ſtones, or particles of ſand, in this gland (*d*).

Nevertheleſs that has happen'd, which is very eaſy in affairs of this kind; I mean, that one of thoſe who are mention'd by me, has eſcap'd him; and, on the other hand, that ſome of thoſe quoted by him, have eſcap'd me; as in general I am not wont to mention any others, but thoſe that occur to me while I am writing.

And to this I may add another reaſon, why I am not very ſorry for having undertaken that labour; becauſe from thence, join'd with my obſervations, which I have given at the ſame time, or ſeparately, it is eaſy to perceive, not only that it has not happen'd to others, as it has happen'd to a celebrated anatomiſt at preſent living, "That in all the carcaſes of adult men, who "died of any diſeaſe whatever," they found the pineal gland "fill'd with a "great number of ſandy particles;" but this alſo, that there is no longer any room to hope, that, from the ſoundneſs of this gland in thoſe who were not unſound in their minds, or from the diſeaſes of it in thoſe who were, the opinion of Des Cartes, in regard to the ſeat of the ſoul, ſhould be confirm'd.

At leaſt, I have deſcrib'd to you diſorders ſeen in that gland, or about that gland, thirteen times. And you will ſee, that in nine of theſe inſtances (*e*), it was without madneſs; or any alienation of the mind. On the contrary, you will ſee that there was an affection of this kind in others (*f*), in whom this gland had no diſorder; as you will gather from my ſilence on that head.

For almoſt always, when I diſſect a brain; and not only in the bodies of inſane perſons; I make a practice of inſpecting the pineal gland attentively, both within and without: and if there be any-thing in it worthy of remark, to transfer it into my common-place-book; and from thence into my deſcriptions.

4. And this my almoſt univerſal cuſtom ſufficiently ſhews, that the laudable exhortations of Gunzius were not waited for by me; but that long before, I had not neglected to remark, in my obſervations, not only what was natural in this gland, but what was preternatural therein; and, at the ſame time, as you very well know, to mark down the appearances in the other parts of the brain, and in the remaining parts of the body: and not theſe alone, but what had preceded in the living bodies, as far as I could ſee, or be inform'd; although, when I happen'd to have occaſion to mention this gland, I have not been willing to touch upon any other things, than thoſe which were ſufficient for our purpoſe: nor do I as yet repent, that for thoſe reaſons; which whether he has invalidated altogether, is not the place to determine here; I have ſpoken of the nature of this gland in ſuch a manner, as to ſeem doubtful, whether it was not, in ſome reſpects, different from the other part of the ſubſtance of the brain.

(*d*) Epiſt. 5. n. 12.
(*e*) Epiſt. I. n. 14. III. n. 14. V. n. 11. VI. n. 12. VII. n. 15. X. n. 17. XI. n. 11. XIV. n. 35. XXI. n. 24.
(*f*) Epiſt. 8. n. 4. 8. 11.

There

There is, certainly, no other part in this whole ſubſtance, which is ſo frequently, as that gland, ſubject to particular diſorders; and eſpecially, that contains ſandy particles and ſtony concretions ſo often.

And although you have heard above, that this diſorder has been found with madneſs, and without it alſo; yet I would not have you forget, that there is not any one diſorder, wherewith it is ſo frequently found to be join'd, as with madneſs.

And if the obſervations, which I have given heretofore, and pointed out (*g*), ſhould happen not to be ſufficient to demonſtrate this circumſtance; yet there are ſtill others in Gunzius, which you may add.

I do not ſpeak of thoſe wherein he conjectures, that there was an alienation of mind, in ſuch a manner, as to leave you at liberty to deny it, if you think proper.

But I ſpeak of others, in which there was an evident and real madneſs; and theſe either taken from authors that he has quoted, or made by himſelf: and I ſpeak of the latter in particular, ſince they are taken with ſuch accuracy, as to make them worthy, if any others are, of being added to the Sepulchretum.

And if you read theſe obſervations over, I would have you, among other things, obſerve that the ſtony concretions, which he found in the pineal gland, were either yellow, or approaching to yellow: and then obſerve what other diſorders, which I am preſently to take notice of alſo, were ſeen by the ſame author; not only in that gland, but in the brain of inſane perſons in general; as you have ſeen of what nature theſe were in the woman in queſtion, and will ſee below (*b*) in another.

5. A man, about forty years of age, from the time of being a rower in the gallies, became at firſt hypochondriac, and after that mad: but his madneſs was of a joyful kind: in this ſtate he continu'd ten years; when, at length, being ſomewhat ſwell'd in his whole body from a cachexy, and having a difficult reſpiration, he died in the hoſpital about the firſt days of January, in the year 1750. In his body were the following things worthy of remark.

The thorax contain'd a great quantity of water: and ſome part of the lungs was indurated.

When the head was cut off, a very ſmall quantity of water flow'd out of the cranium: and this they obſerv'd when they cut into it, and, in like manner, when they took out the brain. Which I, for certain reaſons, had not in my power to diſſect, till the third or fourth day after it had been taken out, as I likewiſe could not at all examine the parts contain'd in the belly.

In examining the brain, therefore, with accuracy; if I omit the ſmallneſs of the pineal gland, which is a doubtful circumſtance; I found no other things that relate hereto, except that the medullary ſubſtance of both hemiſpheres was ſomewhat harder than uſual; and that the tract, which is ſomewhat prominent through the middle and upper ſurfaces of the corpus

(*g*) Epiſt. 8. n. 16. (*b*) N. 7.

calloſum longitudinally, was not ſingle only, from the beginning quite to the end, but in one place double.

6. In regard to the hardneſs, we will conſider that afterwards. Now let us conſider what relates to the corpus calloſum.

As that celebrated man Joannes Fantonus; to whom Lanciſi wrote his diſſertation upon the ſeat of the *anima cogitans*, or ſoul, in the corpus calloſum; had ſeen in a certain man (*i*), who was not diſorder'd in his ſenſes, the pineal gland "three times as thick as uſual;" ſo he alſo ſaw another man (*k*); in whoſe corpus calloſum he found a hard tumour bigger than a walnut; troubled with an obſtinate cephalœa in the crown of the head, and with epileptic attacks: but did not obſerve him to utter any abſurd things till the laſt months of his life, and even then not always, but only frequently; and that merely when the pain in his head was very violent.

And I have obſerv'd many appearances of leſs conſequence in that ſame corpus calloſum. For inſtead of that tract whereof I ſpoke laſt, which is in ſome ſingle and ſimple, and in others double; ſo that Lanciſi call'd the double appearance *nervuli longitudinales*, as I have taken notice of heretofore (*l*); I have met with two ſulci, and thoſe of a conſiderable depth, in the body of an inſane perſon (*m*).

And you will ſee that Gunzius (*n*) had obſerv'd, not only the *nervuli* of Lanciſi in another perſon, but a ſulcus, or furrow alſo, "proceeding on in "a winding courſe, and ſeeming to be defective, as it were, in ſome "places."

And Lanciſi himſelf had obſerv'd thoſe nervuli, in an idiot, not to have been "parallel to one another, in the manner they generally are."

Shall we then allow the cauſe of infanity of mind to conſiſt in things of this kind?

I have not now that reaſon for doubting, which I had, from a frequent ſuſpicion that theſe tracts, and ſulci, in thoſe parts, are not form'd by nature for the ſake of any utility or advantage; but either from the compreſſions of both hemiſpheres of the cerebrum; where the right and the left, coming near to each other, terminate in the lower border, and change the cortical ſubſtance into that medullary part which lies like a vaulted roof; as I ſhall ſhew very clearly in another place; upon the right and left ſide of the corpus calloſum; or, as I ſee it has lately come into the mind of a very ingenious man, that they are owing to the pulſations of the arteries, which lie longitudinally, in like manner, upon the middle of the ſame corpus calloſum.

For both theſe ſuſpicions ſeem to be invalidated, by thoſe lower and more ſlender parallel tracts, which paſs on one ſide, and on the other, to the middle of the ſame ſurface; the conformation of which tracts cannot be accounted for from the cauſes I ſuſpected.

And indeed, although both the ſuſpicions, and particularly the ſecond, ſhould ſtand good; and any perſon ſhould ſuppoſe himſelf at liberty to con-

(*i*) De Obſ. Med. & Anat. Epiſt. 8. n. 3.
(*k*) Epiſt. 5.
(*l*) Epiſt. 8. n. 6.
(*m*) Ibid.
(*n*) Proluſ. ſupra ad n. 3. cit.

jecture

jecture a different and noxious internal conſtitution of the corpus calloſum, from a different courſe of the arteries; yet how could he, by theſe means, explain madneſs, which is not innate, nor congenial, but adventitious?

My reaſon for doubting, therefore, is taken from other conſiderations; that is to ſay, from obſerving, not only that thoſe irregular conformations of the ſurface of the corpus calloſum are very ſeldom found in the bodies of inſane perſons, but alſo that they have been ſeen by me in many bodies, in which, when living, there had been a perfect ſanity of mind.

As, therefore, I judge that theſe things deſerve farther conſideration, I will paſs on to that appearance which always, or at leaſt almoſt always, has occurr'd to me in the brain of inſane perſons; and which was remark'd even in the two obſervations in queſtion.

7. A woman, of more than thirty years of age, who, from her very birth, had been inſane; at laſt taking a reſolution not to eat, nor to drink, had died in the hoſpital, at that time in which it was my cuſtom to purſue, in that place, the anatomical exercitations that had been a little while intermitted; that is, about the beginning of January in the year 1757.

In examining the parts of the belly; for thoſe which belong to the thorax I had previouſly demonſtrated from another body; nothing ſeem'd more ſurprizing, than that a woman, who was yet in the prime of her life, and an idiot, ſhould have, to all appearance, preſerv'd her virginity.

For at the orifice of the vagina, which was narrow as in a virgin, the ring of the hymen was not wanting: nor had it any rupture; although it had a broad foramen, as it generally has in thoſe of a more mature age. But I was the more doubtful upon this ſubject, when I ſaw the vagina to be extremely ſmooth in its whole ſurface, excepting a very few rugæ at the lower part.

The orifice of the uterus and the uterus itſelf were found; and in the ſtate that was to be expected in a virgin. Neither of the tubes gave paſſage to a ſlender probe introduc'd by the larger orifice: or, at leaſt, not farther than to one half their length. Both the teſtes were pretty hard, white, and of an unequal ſurface; having no veſicle within.

But when I cut into, and examin'd with attention, all the parts comprehended in the cranium, I found them all in a natural ſtate. And if you aſk particularly in regard to the corpus calloſum, and the pineal gland; in the former was one ſimple tract; the latter was ſomewhat large indeed, and from a brown colour almoſt yellow as it were.

One thing only, therefore, was worthy of particular obſervation: I mean, that wherever I cut into the ſubſtance of the cerebrum, and cerebellum, I found it to be evidently harder than uſual.

8. For this was the very circumſtance which I ſaid was in the two obſervations in queſtion; and even in almoſt all the others that I have made, relative to the diſſection of perſons affected in their ſenſes.

Turn back to my eighth letter (*o*), you will ſee that in all the bodies of inſane perſons, which I had diſſected to that time, the appearance was al-

(*o*) n. 14.

ways

ways the ſame. And in what bodies this circumſtance occurr'd to others, you will find in the ſame place (*p*).

And you may now add Gunzius (*q*), who ſaw the brain "dry and com-"pact" in two bodies, and of ſuch "a firmneſs," that he could not conſider it as very ſound.

Yet it certainly did not happen to him, nor yet to thoſe others, as far as I know, as it had happen'd to me; I mean, that in diſſecting the bodies of many maniacs, they found the brain very hard in them all.

But it has, at length, happen'd to me; as you will read in the fifty-ninth letter (*r*); that in the body of a man, who had labour'd under a kind of melancholic delirium, I found the brain very lax: perhaps becauſe the delirium had been very ſlight; or becauſe it was now cur'd: although it is of very little conſequence to me, from which of theſe cauſes it was, or whether from any other; as I did not ſcruple to declare (*s*) who had ſeen the brain lax in maniacs, and did not attempt to conceal (*t*) that it may be hard without madneſs, in the place where I expreſsly added this remark, that the very frequent obſervation of a hardneſs in the brain, in this kind of diſeaſe, is not to be neglected indeed; but yet, what I now confirm, that it did not ſeem as if this were to be principally regarded.

And it will be thought, that this is to be ſo much the leſs regarded, if any perſons; following the opinion of a learned man, who chooſes to deduce the cauſe of madneſs from the blood being become very thick and viſcid, and circulating very ſlowly, for that reaſon, through the ſmall internal arteries of the brain, diſtending them, and by the diſtenſion thereof, compreſſing the contiguous medullary ſubſtance, and by that means rendering it leſs fit to perform its uſual offices; if any perſons, I ſay, following this opinion, ſhall add that the ſubſtance of the brain, when preſs'd by the diſtention of the ſmall arteries, is, by theſe means, compacted together and conſtipated, and conſequently becomes harden'd; but that the cauſe of madneſs is to be deduc'd from the internal diſpoſition of that ſubſtance being chang'd, in ſome way or other; and not from the hardneſs which accidentally accompanies this change.

However, if you ſhould wiſh to judge, from my obſervations, whether, in the brain of inſane perſons, the veſſels are ſo frequently found to be immoderately diſtended with blood, as that hardneſs is found; read the obſervations once more: and ſince other learned men are not wanting, who think, that madneſs may be owing to polypi form'd within the ſinuſſes of the brain, and produce, with that view, two or three diſſections of the brain and viſcera of maniacal perſons; I would have you conſider theſe diſſections, as ſuch whereby you may encreaſe the number of obſervations relative to this ſubject: but in regard to polypi, I would not ſo much as wiſh you to enquire, whether I have ever met with them in the ſinuſſes of maniacal perſons, as to call to mind thoſe things that you have already receiv'd from me (*u*), in re-

(*p*) n. 17.
(*q*) Proluſ. ſupra cit.
(*r*) n. 15.
(*s*) Epiſt. 8. n. 18.
(*t*) Ibid.
(*u*) Epiſt. 24.

ſpect

ſpect to polypi not being to be allow'd of, except in a dying or a dead body.

But now let us go on to other things.

9. Though all hydrophobic perſons are not delirious, as has been ſhown in the eighth letter (*x*); yet, in that letter, leſt I ſhould recede from the order of the Sepulchretum, I have ſpoken of hydrophobic patients after maniacs.

We will do the ſame thing in this letter. And as, in this interval of time, it has not happen'd that I had any opportunity of diſſecting the bodies of patients of this kind; I will make mention of thoſe obſervations, of other authors, on theſe bodies, which were not then extant.

And I could wiſh they had given them in full: for though the intention of ſome was ſo to do, yet different cauſes interven'd to different perſons.

And indeed that illuſtrious man Senac (*y*) was prevented, by the very intention of his writing, from ſaying more than this; that he had ſeen the pericardium ſo conſtricted, and annex'd, to the ſurface of the heart; in a man who died of dog-madneſs; that it could not be ſeparated therefrom.

And Alexander Bruce, in a diſſertation publiſh'd at Edinburgh (*z*), in the year 1755, relating an obſervation of the celebrated Rutherfoerd, made upon a hydrophobic patient, whilſt living and after death; which patient had been in the hoſpital there; after having mention'd other appearances; and among theſe the great diſtention of the large inteſtines with air, a ſlight inflammation of the ileum, with lividneſs here and there, as alſo a diſeaſe of a portion of the liver, and the circumſtance of this viſcus being forc'd out of its ſeat, together with the reſt of the viſcera, but nothing unuſual in the thorax; when you expect to hear what was the ſtate of the brain, the larynx, and the pharynx, ſays nothing more than this: that the inſpection of theſe parts was prevented by the relations.

And for the ſame reaſon, probably, I ſhould ſuppoſe it to have happen'd, that Morando Morandi (*a*), a man whoſe untimely death I cannot but lament, wrote nothing upon theſe three parts, when he publiſh'd, in that very year, ſome of his diſſections of perſons who died of the ſame diſeaſe.

For in one of them I ſee nothing taken notice of, but that ſome of the external and internal muſcles of the thorax were inflam'd; and even very near to a gangrene, and to a putrefaction as it were.

Yet in two he has given no hint upon the ſubject of theſe muſcles: but has ſaid that the ſtomach and inteſtines were affected with a gangrene, and daub'd over with a black and fœtid bile; that the bladder, and the corpora cavernoſa penis, were ſeiz'd with an inflammation; that of the membranes many were dry and tenſe; and many others cloſely coher'd with the viſcera, as in a peripneumony; being all nearly depriv'd of their fat, and the omentum almoſt dried up; finally, that the veins were quite full of the moſt fluid blood: but that the arteries were empty, contrary to what others; which is a circumſtance he was by no means ignorant of; though not all, had ſeen in hydrophobic patients.

(*x*) n. 19. & 22.
(*y*) Traité du Cœur. l. 2. ch. 1. n. 1.
(*z*) De Hydrophobia.
(*a*) Della Cura preſervat. della Rabbia Canina.

10. And

10. And theſe obſervations, if you conſider what is deficient in each of them, will immediately ſhow, that hereby is not encreas'd the number of thoſe which I complain'd, in the eighth letter (*b*), were as yet too few.

But if you conſider what each of them propoſes, as being found even in ſome parts of the body only; and compare it with the obſervations of every kind; the united ſum of which I have referr'd to diſtinctly, and in order, in that very ſame letter (*c*); you will at leaſt ſee, that they will be uſeful to confirm the great variety, which I there ſhow'd to exiſt, among hydrophobic patients: nor is it to be wonder'd at, ſince even theſe few which I have at preſent added, are ſo different from each other, that what circumſtances ſome have, others have not; or at leaſt not entirely.

And the more I ſee thoſe varieties confirm'd by new obſervations, the more clearly I perceive, that no equally probable conjecture, upon the cauſe of the hydrophobia, can be taken from any other ſource, but that from whence I took it, in conjunction with the moſt eminent men (*d*).

For how, by way of example, can I account for the difficulty of ſwallowing water, which is common to all, from the diſorder of the blood; which I know has been ſeen to be different in different perſons? And indeed the blood of that hydrophobic patient, which the Edinburgh diſſertation (*e*) mentions, when taken from the veins, "was good through the whole courſe of "the diſeaſe."

But if I ſuſpect ſome peculiar change to be brought on by this poiſon, in the brain and the nerves; from whence they may be eaſily conſtrain'd to excite external or internal convulſions; ſcarcely any thing will prevent me from explaining therefrom, that difficulty of ſwallowing which is common to all; and that great number of varieties in the living and dead bodies, according to the various diſpoſition of various perſons: but if you think that even then I have not done enough, you may read the diſſertation I have commended, which not only follows the ſame conjecture, but thereby explains every appearance in the living and dead body; particularly in the living body; ſufficiently and at large.

11. You ſee how far I ſuſpect the brain to be affected, and that by the force of this poiſon too; leſt you ſhould ſuppoſe me to be of the opinion of thoſe perſons, who have attributed all this diſeaſe to the force of the imagination merely.

I confeſs however, that I do not take upon me to deny, but it may be encreas'd by fear, and a conception of danger. Yet I do not think that fear alone is ſufficient to produce it.

For how could it be brought on by fear, in many perſons (whoſe caſes I ſhall take notice of a little below (*f*)), who being ignorant that the animal, whereby they had been bitten, was mad, thought of every thing but this; and yet ſhow'd that they were already affected with a diſeaſe of which they had not the leaſt ſuſpicion: and that by very manifeſt, and ſoon after fatal, ſymptoms.

The poiſon, therefore, which is admitted; in whatſoever manner it may

(*b*) n. 32 in. fin.
(*c*) n. 30. 31. (*d*) n. 32.
(*e*) ſupra ad n. 9. cit.
(*f*) n. 15.

be

be ſuppos'd to act; muſt be acknowledg'd to be the cauſe of the diſeaſe. And indeed the more latently and inſiduouſly this poiſon preſerves its force, and at length brings it into action, the more cautious ought we to be in preventing its admiſſion; and if it has been accidentally admitted into the body, the more diligent ought we to be in counteracting its efficacy; before it can exert its pernicious qualities.

If, therefore, it ſhould at any time be a queſtion, whether the fleſh of an animal affected with canine madneſs, can affect therewith the perſons who eat it; I ſhould be leſs influenc'd by the example of Scaramucci (*g*); wherein the fleſh of a ſow, which had been bitten by a mad dog, was eaten without occaſioning any injury, although it were certain that this madneſs was already manifeſt in that ſow; I ſhould be leſs influenc'd, I ſay, by theſe examples, than by thoſe of a contrary nature; and particularly that of Bauhin (*h*); to which may, moreover, be added, the obſervation of Lemmery (*i*), of a dog becoming mad, by eating blood which had been drawn from a patient affected with the hydrophobia: nor does it make the matter very different, that the blood was not boil'd, as fleſh generally is; ſince a very different, and even extreme, force of fire is requir'd, in order to make us ſuppoſe, that a virus, which adheres very cloſely and obſtinately, can be entirely driven away.

And although the obſervations which are produc'd from Zacutus (*k*), of the blood of mad dogs adhering in ſuch a manner to a ſword wherewith they had been ſtabb'd, and preſerving its poiſon to ſuch a degree, that, being introduc'd from thence into wounds, even many years after, it brought on canine madneſs; although, I ſay, theſe obſervations are too much of the marvellous kind to be readily believ'd by every one; yet I think, if I am not miſtaken, I have read a more credible one in the work of the celebrated Brogianus (*l*); and would not deny but it is neceſſary for thoſe who diſſect dead bodies, to be frequently admoniſh'd, that they be very attentively cautious in the examination of hydrophobic bodies; and that they do not accidentally prick, or cut, their fingers; nor raſhly preſume to daub over their hands, if they happen to be affected with little ulcers, with the blood, or any other juice, of theſe bodies.

12. But in regard to theſe, and other cautions againſt admitting ſo dreadful a poiſon; if we are to be faulty on one ſide, none will deny that it is better to be over-cautious, than but little ſo; and eſpecially one who conſiders how difficult an undertaking it is, and how uncertain in its event, to overcome this poiſon, after it has been admitted, before it betray itſelf by the dread of water, and the difficulty of drinking thereof.

For when the matter is ſo far advanc'd, ſo rare are the ſucceſsful, ſtable, perfect, and certain cures, that to thoſe who conſider what generally hap-

(*g*) Eph. N. C. Dec. 3. A. 9. & 10. in Append. ſub n. VI.

(*h*) apud Stalpart. Cent. 1. Obſ. 100. in Schol. haud procul a fine.

(*i*) Hiſt. de l'Acad. R. des Sc. A. 1707. Obſ. Anat. 1.

(*k*) apud Stalpart. Schol. cit.

(*l*) De Veneno Animant. P. 2.

pens, that which Ovid (*m*) ſaid of medicine in his time may ſtill ſeem true.

Nec formidatis auxiliatur aquis.

" Nor do the dreaded waters give relief."

For which reaſon it is the more to be wiſh'd, that the diſeaſe may not come to this ſtage.

And as to the bath, which has been ſo much recommended in other places, we find there are many in thoſe very places; as we have formerly ſeen (*n*); and even among our own countrymen, who do not put any confidence therein.

Wherefore ſome did not fail to have recourſe to mercury; and to the remedies prepar'd therefrom. In purſuance of which method, others; particularly in this age, and even among the Italians; began to make uſe of the ſame preſervative method.

Thus Morand (*o*) has produc'd many obſervations of his own to this effect. Yet he has join'd a mercurial remedy with others that are alexipharmac; and indeed has ſince added muſk, in imitation of the Chineſe: and this that the preſervative cure, as he himſelf ſays, may be the " more ſafe."

This great number of remedies, and cupping-glaſſes, which are applied to the wound, in the beginning, by ſome perſons, and even the red-hot iron deeply impreſs'd upon almoſt all wounds of this kind, not only leave it uncertain, among phyſicians, to what remedy chiefly the ſafety of patients is to be aſcrib'd; but alſo make the mind of a man; who has been bitten, and is about to make uſe of them; fearful and uncertain, whether, even by theſe means, he ſhall be ſafe for the future: and eſpecially a man who is in doubt, whether thoſe who are ſaid to have been ſav'd, had really contracted the poiſon; and would certainly have fallen into an hydrophobia, without the uſe of theſe remedies.

And although this doubt may not be juſt of all perſons; yet the very ſuſpence of mind muſt, of courſe, bring on ſo much uneaſineſs; in an affair of the utmoſt importance; that even for the ſake of avoiding this very anxiety alone, no caution, in avoiding the poiſon of a mad dog, can ſeem too great to any perſon.

13. Nor ought we to aſcribe ſo much to the remedy, which was communicated to the Royal Academy of Sciences (*p*); notwithſtanding it has been ſurprizingly uſeful, not only by way of preſervation, but by way of cure; as to acquieſce therein, before it be certain, that it had produc'd the ſame effect in all perſons: and that for a long courſe of time in ſucceſſion.

For by continu'd experiment it has been found, that many remedies which had been formerly in great eſteem; as preſervatives, or curatives, of this kind; do not anſwer.

(*m*) De Ponto l. 1. Eleg. 4.
(*n*) Epiſt. 8. n. 26. & 29.
(*o*) ſupra ad n. 9. cit.
(*p*) Hiſt. de l' A. 1749. Obſ. Anat. 4.

The Academy therefore; in purſuance of that wiſdom for which it is ſo reſpectable; did not think proper, in an affair "of ſuch great moment," to omit mentioning the hiſtory communicated thereto, but without interpoſing its own judgment on the ſubject.

And that hiſtory is certainly worthy to be read; as it is written with accuracy, and confirms, againſt all who may doubt thereof, that they have written true things, who have aſſerted, that the poiſon of a mad dog had ſometimes been introduc'd into the conſtitution without a wound; and only by the foam being ſlabber'd upon the patient: the names of which authors I have, in a former letter (*q*), ſhown you where to find; and you will add, beſides others, the celebrated Piedmont profeſſor Mazzucchelli (*r*).

I wiſh the time may come, wherein that, or any other equally ſimple remedy, may be ſufficiently approv'd of, by frequent and long-continu'd experience: or even that remedy which the learned Arrigoni (*s*) has propos'd, while I was writing theſe things; that is, arteriotomy in the back-part of the foot, perform'd in the manner he uſually performs it; which he ſhows by an obſervation he has added, to have had a happy event.

And although this obſervation is ſingle, and the cure was not perform'd without the joint uſe of other remedies; which ſeveral authors, and among theſe Morand, have been wont to exhibit; yet you will readily read it over, as you will three others, in like manner, that relate to maniacs, who were diſmiſs'd from the hoſpital, in good health, both of body and mind, after having been cur'd by the ſame remedy; if you except one, who was carried off by a phlegmon, within five days after he had been already reſtor'd to ſoundneſs of mind. For this phlegmon, beginning from the metacarpus; which they had previouſly bruis'd by the iron chains, while he was furiouſly raving, and agitating himſelf with vehemence; had extended itſelf from thence to the arm; and from the arm to the ſhoulder, with great impetuoſity and celerity.

And while you read this, you will commend the advice of Valſalva, which I have formerly taken notice of to you (*t*); I mean, that patients, who are furious, ſhould be bound by firm chains indeed, but not by chains of a hard nature.

However, in regard to the arteriotomy which has been recommended, I would not have you remain uninform'd, that the ſtudents here, having begg'd of me that I would order the artery to be laid open; in that part of the tarſus where it is to be cut into; we certainly found it to lie, in that body, not only under the common integuments, but alſo under the tendons, which extend the toes.

14. Before I make an end of writing, I think it may not be improper to mention a caſe, which was obſerv'd at Padua, in the year 1754, by a phyſician whoſe veracity is very well known to me.

It does not altogether relate to the hydrophobia indeed; yet it relates to a diſorder that has ſome affinity thereto, and has many circumſtances ſeem-

(*q*) Epiſt. 8. n. 21.
(*r*) apud Morandium paulo ante cit.
(*s*) Diſſertaz. della Mania &c. P. 3. c. 2.
(*t*) Epiſt. 8. n. 5.

ingly of a ſimilar nature; as you will learn from his ſhort narration, and from a very few animadverſions, which I ſhall add thereto.

A cat, which was afraid leſt a little whelp ſhould do any injury to a kitten ſhe had brought forth not long before, ran to encounter him. The maſter of the cat took up the poor little dog in his arms. But the miſchievous cat fell foul upon her maſter's leg, at the lower part, with her teeth, and her claws; and wounded him a little above the tarſus anteriorly.

The maſter, for three days after, neither felt, nor fear'd, any harm; as the cat had not, either before, or ſince, ſhew'd the leaſt ſigns of being mad.

But on the fourth day after the bite, he was ſeiz'd with ſo great an anxiety about the præcordia, that, being no longer able to endure it, he had recourſe to the phyſician who related all theſe circumſtances to me; and begg'd his aſſiſtance with ſuch earneſtneſs, and with ſuch an appearance in his eyes and his countenance, that made him apprehenſive of madneſs being very near at hand.

Leeches and cupping-glaſſes being therefore immediately applied to the wounds, (on which was laid for a long time after, by the particular deſire of the patient, that exotic ſtone they call *cobra*) and blood being more than once taken away, from the upper and lower limb, on the oppoſite ſide; as the fullneſs and ſtrength of the pulſe requir'd; and a great quantity of water being frequently given, which the man drank without any repugnance or difficulty; and yet theſe remedies, and others, not having been of the leaſt effect; and even a ſlight delirium having come on; there was only one remedy which would relieve his anxieties: and this was a water-bath made uſe of in ſuch a manner, that, as often as ever theſe anxieties were troubleſome, the patient, of his own accord, threw himſelf therein; which he often did; for it was a warm ſeaſon of the year.

Laſt of all, being ſeiz'd with a conſiderable fever, though but of ſhort continuance; and having ſweat to a great degree; he ſeem'd now to be quite well on the 14th day after the bite.

But at every full-moon after that time, from the place which had been bitten; and which, as the wounds had been too haſtily heal'd up, was ſurrounded with a livid colour, in the manner that a contus'd place generally is; he began to feel certain irritations ariſe, which, as ſoon as they had reach'd up to the præcordia, brought on thoſe ſame very great anxieties that he had before experienc'd: and he could not be freed therefrom, but by loſing blood from a vein.

After theſe ſymptoms had return'd in the ſame manner, and at the ſame time, quite to the two-and-twentieth month, they began to return at every fourth full-moon only: and this period they ſtill kept in the fourth year after the bite had been receiv'd; that is, the time of my writing this letter.

15. If you except dogs; I do not remember to have read of hydrophobias, or violent injuries of this kind, having been brought on more frequently, in general, by any animals, than by cats.

But if to dogs and cats only thoſe follicles were given, which emit a kind of ſtrong-ſmelling fluid to the anus; a very conſiderable confirmation might be taken from hence, of the conjecture of thoſe perſons, who recount, among

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the cauſes from whence dogs become mad, an obſtruction " of the ſacculus ;" and even of the ſacculi; for there are two that contain this fœtid matter, " which ſeems to be the moſt acrid part of the humours ; ſo that if it be " re-abſorb'd into the blood, or be leſs properly ſecreted therefrom," it becomes capable of generating every very violent diſorder.

And that this humour is certainly endow'd with a great power of irritation, I have ſeveral times been convinc'd ; but particularly when, in diſſecting a weazel, and in diſcharging the fluid from thoſe ſacculi ; which it had very large in proportion to its own ſize ; I immediately perceiv'd my noſtrils to be ſtruck with a kind of acute *odor ſylveſtris*, ſo that it ſeem'd to reſemble nothing more than the odour of burning ſulphur.

Theſe ſacculi, however, are not given to weazels only, but to a great number of other animals alſo ; as you have already read (even before others, and in particular Peyronnius (*u*), had ſhewn them to exiſt in the *moſchiferous animal*) in our Adverſaria (*x*) ; ſo that it is not ſurprizing it has been ſince written, by men of eminence, " that they are found in almoſt the whole " genus of quadupeds ;" or, at leaſt, ſince many ſpecies are, nevertheleſs, to be excepted, " moſt of all," as the celebrated Fantonus ſays (*y*), " in " carnivorous quadrupeds, and ſuch as have claws."

That cauſe, therefore, of canine madneſs being ſet aſide ; if we conſider the thing itſelf only, it is ſcarcely to be doubted, but after dogs, cats bring on a hydrophobia, as I juſt now ſaid, or injuries approaching to the nature thereof very nearly, more than other animals.

Scaramucci (*z*) has three examples of this kind : that is to ſay, in two women, and in a preſbyter ; Brogianus two (*a*) ; one in a prieſt, and another in a certain man : Lindernius (*b*) one : and, not to be too tedious, Stalpart alone (*c*) had produc'd nine examples, of perſons being infected with canine madneſs by cats, and kill'd thereby ; the firſt of whom he himſelf had ſeen, and the others Amatus, Hildanus, and Zacutus, had mention'd.

Nor was an example wanting at Padua, ſome years ago, in a nobleman ; who, like the prieſt of Brogianus, begg'd of thoſe who came to ſee him, to ſtand at a diſtance from him, leſt he ſhould bite them ; thereby confirming what more than one phyſician had admoniſh'd : I mean, that all patients, affected with a hydrophobia, are not delirious.

But if you ſhould be willing to examine moſt of the examples I have referr'd to ; you will moreover know, that it had happen'd more than once, that no-body could contend for the diſorder's having ariſen from fear ; as the perſons were ignorant that the cat, who had attack'd them, was mad : and they were not ſeiz'd with the madneſs till many months after, when they had almoſt forgotten the accident ; as in the obſervations of Stalpart and Hildanus.

And indeed thoſe two men ſpoken of by Lindernius and Brogianus, ſeem to have been ignorant, and unapprehenſive ; particularly the ſecond ; as he

(*u*) Mem. de l'Acad. R. des Sc. A. 1731.
(*x*) IV. Animad. 29.
(*y*) Diſſert. Anat. Renov. 4.
(*z*) Supra ad n. 11. cit.
(*a*) P. 2. ibid. cit.
(*b*) Commerc. Litter. A. 1735. Hebd. 11. n. 2.
(*c*) Cent. 1. Obſ. 100. & in Schol.

was

was bitten by a cat which he ſtruck : ſo that the animal ſeems to have been provok'd by anger, rather than by madneſs, as in the caſe I have related (*d*).

And to the ſame caſe relates, in ſome meaſure, that which happen'd in the preſbyter of Scaramucci ; I mean, that a ſtreightneſs of the fauces, from which he had ſoon eſcap'd, return'd, " for many years, at the ſame time of " year " wherein he had been attack'd by a mad cat : though this animal had left an impreſſion of its teeth only, without any laceration of the ſkin whatever.

But two other examples, of the ſame authors, relate thereto ſtill more.

For, in a woman ; of whoſe, and of other ſimilar caſes, I have ſpoken too briefly in the eighth letter (*e*) ; the firſt ſigns of a hydrophobia diſcover'd themſelves, when from the wound, which was already ſhut up, " ſhe felt " a kind of ray, as it were, moving upwards through her arm, towards her " breaſt, with an inflammatory ſenſation."

And in a man ; who was one of the three bitten by the ſame dog, and who liv'd about four years after two had died from the ſame cauſe ; out of the wound, to which a red-hot iron had been applied ; for it had never come to cicatrization ; a great quantity of blood was diſcharg'd every year, at the time wherein the wound had been inflicted ; " till a vein was open'd in the " tibia, where the wound had been receiv'd."

And now, ſince I have made mention of the mad dog alſo ; beſides other obſervations relating hereto, I would have you read that which Roſcius has given in the works of Hildanus (*f*).

You will ſee how many, and how violent ſymptoms ; except that the drinking of water was never refus'd ; were ſuffer'd by a matron, after a very ſevere pain of the arm, which had been bitten by a mad dog ſeven years before ; and, in like manner, after as many more years, the beginning of her diſorders always ariſing from the ſame arm ; and a third time after the interval of ſix years ; then after one year only, twice in the following year, and three times in the year ſucceeding that ; but with this peculiarity, that the more frequent the attacks were, the more ſhort they were alſo.

After the wound had been receiv'd, a great number of remedies had been immediately applied thereto ; but after theſe applications the wound was brought to a cicatrix.

And as this cloſing up of the wound ſucceeded very badly alſo with the woman mention'd from Scaramucci ; and as the contrary treatment was very advantageous, to a man of whom it is ſaid, from his obſervation, that the wound never coaleſc'd ; it may eaſily appear that the monitum of all thoſe, who have taught that the wound ſhould be kept open a long while ; and if it happen to be ſhut up too ſoon, ſhould be open'd again ; is a very excellent rule to follow.

And as we have recommended this practice (*g*) in a former letter ; ſo I could wiſh it had been made uſe of in the caſe which I have related to you lately.

(*d*) N. 14.
(*e*) N. 21.
(*f*) Cent. 1. Obſ. Chir. 86.
(*g*) Epiſt. 8. n. 26.

16. However,

16. However, as the ſame caſe, join'd together with others, which have been formerly produc'd (*b*); and particularly with thoſe that have been juſt now taken notice of by me; confirms what I have conjectur'd in regard to the communication of this poiſon by the nerves, and the convulſive nature of it, in a very conſiderable degree; ſo the one inſtance of relief, from a water-bath, agrees with thoſe things which I have before thought proper to ſay (*i*), of the uſe of a remedy of this kind, not deſerving to be entirely deſpis'd: and the advantage which reſulted from a large diſcharge by ſweat, confirms what has been aſſerted on this ſubject, both by ancient and modern authors.

The chief of whom; that I may not take up your time in mentioning them here particularly; will be ſufficiently ſhewn by that Edinburgh diſſertation which I have commended above (*k*). Farewel.

LETTER the SIXTY-SECOND

Relates to Epilepſy, Convulſion, and Palſy.

NOW take the remaining obſervations, which relate to the three other violent diſorders of the brain, and nerves; epilepſy, convulſion, and palſy.

As to the epilepſy, however, I ſhould have no obſervation to add here, if I were not unwilling that ſhould be loſt, which was communicated to me at Venice, about the year 1708, by my reſpectable friends, whom I have already mention'd to you with encomiums, Alexander Bonis, and John Jerom Zanichelli.

2. A young man, of two-and-twenty years of age, was ſeiz'd with a fever without any manifeſt cauſe; nor did he complain of pain or uneaſineſs in any part but in the head. To this were added epileptic paroxyſms; which brought on death within twenty-four hours after the beginning of the fever.

When the cranium was open'd, no diſeas'd appearance was found anywhere, if you except a mucous ſerum; which, being collected upon the anterior part of the cerebrum, betwixt the dura and pia mater, had drawn theſe membranes to a conſiderable diſtance from each other, and had compreſs'd the cerebrum.

(*b*) Ibid. n. 21. & 32. (*i*) Ibid. n. 29. (*k*) N. 9.

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The ſtomach indeed appear'd to be inflam'd: and a conglomeration of round worms was found in the firſt inteſtines. But there had not been the leaſt ſymptom of theſe appearances.

3. Whether the pain of the head was ſo great as to "obſcure" the pain of the ſtomach and inteſtines, as Hippocrates (*a*) ſays, or not; at leaſt his other aphoriſm (*b*) is confirm'd, by death being the conſequence of convulſions, that come on in a feveriſh patient.

But as theſe convulſions made a diſorder, which would not have been ſo ſhort from its own nature, very ſhort; what could be the cauſe of their being ſo vehement? Was it the worms irritating the ſmall inteſtines? I ſhould believe it, if any uneaſineſs in the belly had preceded, the pain of the head.

But what cauſe had produc'd this laſt-mention'd pain? Was it the fever? Whatever the cauſe of it was; if we acknowledge it to be very violent; we ſhall not wonder that the blood was, from thence, obſtructed, or at leaſt detain'd, in the veſſels of the meninges; and that the ſerum was ſeparated therefrom.

And as we have ſhown in a former letter (*c*), that an epilepſy may be brought on, even by a leſs quantity of ſerum than was found here; there is not the leaſt occaſion to repeat, at preſent, what you may read over again in that letter.

And if you examine Bohn (*d*), where he tells you what appear'd to him, in a boy of ten years of age, whoſe body he diſſected; and who, while living, had labour'd, "firſt under a very great pain of the head, after that "under an epilepſy, and a ſtupor of all the ſenſes," in which ſtate he died; you will eaſily conceive what that very learned man ſeems to have thought of ſerum, or rather, if you pleaſe, of lymph, even when not extravaſated, but ſtagnating in the veſſels round about the convolutions of the brain.

4. Let us go on to convulſion. For epilepſy indeed cannot be without convulſion: and convulſion is very often without epilepſy; as it was in that perſon alſo whoſe hiſtory I ſhall immediately ſubjoin.

5. A night-man, who was about fifty years of age to all appearance, of a robuſt habit, of a good colour and conſtitution, but rather inclin'd to a plethora; being given to liquor, and frequently drunk; was buſied, together with his ſervants, in cleaning out the jakes of the hoſpital, at an unſeaſonable time of night, as the cuſtom of ſuch perſons generally is.

And as they were going to and fro, every now and then, as that filthy buſineſs requires, the maſter himſelf thought, once when he happen'd to be alone, that he ſaw a ſpectre cloth'd in white; and being immediately ſeiz'd with a trembling of his whole body, and, at the ſame time, with a diſtortion of the mouth, was found in this ſtate by his ſervants when returning, and carried to bed immediately.

Antiſpaſmodics and cardiacs being inſtantly given; whereby the tremors grew milder, and ſtrength return'd to the pulſe; blood was taken away from the arm, to the quantity of ſix ounces, the ſame night.

(*a*) S. 2. Aph. 46.
(*b*) Ibid. Aph. 26.
(*c*) IX. n. 10. & alibi.
(*d*) Diſſert. de Trepanation. Difficult.

And,

And, in the morning, as large a quantity was taken from the other arm; when the tremors had grown more inconſiderable, and the pulſe was expanded and become febrile.

And even on the following day, a vein was open'd in the foot; ſome alleviation, though but ſhort, being gain'd by each blood-letting; and the blood, particularly at the firſt time of opening a vein, coming out in a frothy and very black ſtate; the craſſamentum being ſomewhat hard, and the ſerum only in ſmall quantity.

The fever continu'd: and inſtead of the *clonic* convulſions, the *tonic* were exceedingly troubleſome, every now and then, in the whole body.

The man could not ſpeak ſo as to be underſtood; nor did he ſpeak intelligibly, from the time of relating to his ſervants what had happen'd to him.

Yet he plainly ſhow'd that he knew the perſons about him, and could diſtinguiſh them one from another: and when he was able, he ſignified, by means of geſtures, that he was troubled with a very oppreſſive pain of his head. And by the effect of theſe diſorders; againſt which other external and internal remedies were made uſe of in vain; he died within ſix or ſeven days, and on the laſt day of January in the year 1747.

The carcaſe being brought into the college on the following day; in order to finiſh the public anatomy of the year; the arms indeed were not rigid, but the fingers were extremely rigid. The penis and ſcrotum were of a blackiſh colour, but only on their ſurface.

The belly being open'd; and the omentum, which had very little fat, being taken away; I obſerv'd the inteſtine colon; which was almoſt every where tumid from included air; to have ſuch a direction, that, after having gone up to the liver, it went down from thence below the navel, to the extent of two or three inches on the right ſide of the navel; and, on the other hand, when it had return'd to its uſual ſituation, and had kept its natural courſe, in a tranſverſe direction under the ſtomach; had paſs'd in an oblique direction, in the left part of the left hypochondrium, and in a ſtrait direction, over the whole anterior ſurface of the ſubjected kidney; it return'd from thence, into the ſame hypochondrium; going down from whence, and entering the pelvis, it degenerated into the rectum inteſtinum without any flexure.

The ſmall inteſtines; if you except ſome tracts thereof, and among theſe not an inconſiderable part of the ileum, which went down low into the pelvis; were diſtended with air: and a yellowneſs, with which they were internally ting'd, was ſeen through their coats.

For as the bile, wherewith the hepatic cyſt was almoſt fill'd, had, by exſuding, made the neighbouring inteſtines externally yellow; ſo, by flowing into them, it had made their internal ſurfaces yellow likewiſe.

The liver, however, was of a blueiſh colour, as the ſpleen was alſo; but although, at the edge of the former viſcus, that colour was very much ſaturated, in no place did it go beyond the ſurface; nor yet in the ſpleen. The ſpleen was of a middle ſize; but the liver was large: yet both theſe viſcera were ſound.

The thorax being open'd, the lungs; which adher'd to the pleura but ſlightly, and in few places, and theſe on the back-part; were rather turgid, and ſhow'd, in ſome places, pretty large areas, which were ſomewhat more elevated than the reſt of the ſurface; and in which a kind of veſicles, as it were, evidently appear'd to be included. There was not any intermediate lobe on the right ſide, but the appearances were the ſame there as on the left.

The pericardium being open'd, I found no fluid therein, not even a drop; notwithſtanding the internal ſurface of it was ſtill moiſt, ſo as not to adhere entirely to the heart, it already began to adhere, in a manner, in ſome places.

In the heart was but very little blood; perhaps becauſe it had flow'd down previouſly, at the time of cutting through the large veſſels beneath the diaphragm; eſpecially as the blood was obſerv'd to be fluid, in ſeveral places, in this body.

Yet I found two polypous concretions, one of which went, from the right auricle, into the vena cava ſuperior; and the other, which was ſomewhat more conſiderable, from the ventricle of the ſame ſide, into the pulmonary artery; being round, and thicker than a man's little finger.

Finally, when the cranium and the dura mater were cut into, nothing worthy of remark occurr'd. But the pia mater had its veſſels ſo full of blood, that even the ſmalleſt branches appear'd, in every part, as if they had been fill'd by injection.

They were full alſo in the ventricles, and even within the medullary ſubſtance of the brain: and when I compreſs'd, gently, the beginning of the ſpinal marrow, which had been taken out together with the medulla oblongata; I obſerv'd not only that blood iſſu'd forth from the fiſſure of that marrow, but alſo from the ſection of the ſubſtance itſelf, which was neareſt to the fiſſure.

In both the lateral ventricles I found a pretty conſiderable quantity of limpid water; yet the plexus choroides were red: and therein were not veſicles, as there generally are, but very ſmall red particles; and theſe ſolid, ſo as to ſeem glandular.

The cerebrum and cerebellum were of a natural firmneſs; but the fornix was lax: the crura medullæ oblongatæ, and the trunk thereof, were lax: but the laſt-mention'd parts only on their internal ſurface.

Nor indeed will I omit to mention an appearance, which; like ſome other things deſcrib'd to you from this diſſection; relates to circumſtances that are leſs common indeed; but ſuch as are to be deduc'd from the original conformation, and not from diſeaſe: that is to ſay, the anterior lobes of the cerebrum, where they are contiguous to one another, had, at the middle nearly of their height, ſome part of their ſurface; which was, in other reſpects, convoluted in the manner of the inteſtines; ſo form'd, that the one was receiv'd, and the other was the recipient in that part.

6. What effects even a vain terror can produce, is ſhown by the hiſtory in queſtion. You ſee that inſtantly, both the clonic and tonic convulſions, as thoſe at the mouth, aroſe from the diſturb'd motion of the ſpirits; and, by detaining the blood in the veſſels ſubſervient to the brain, and by this means bringing on an effuſion of ſerum, certainly brought on new cauſes, for which

theſe very convulſions continu'd even to death; unleſs you ſhould rather chooſe to ſuppoſe that limpid water to have been effus'd into the lateral ventricles, from a compreſſion of the veſicles, moreover, which had previouſly exiſted in the choroid plexuſſes; as we frequently ſee; the remains of which, perhaps, when burſt aſunder, and contracted into themſelves, repreſented thoſe kind of glandular bodies; as might have appear'd to anatomiſts formerly, and from ſimilar cauſes likewiſe; whereby they were led to acknowledge glands, of this kind, in theſe plexuſſes.

Of which things; as thoſe that have ſometimes equally occurr'd to my mind, although I would not perhaps be of quite a contrary opinion to you; that, however, which I have ſaid of the blood being retain'd, is ſo much the more credible, in proportion as this fluid was in greater quantity, by reaſon of the patient being a drunkard and plethoric; and in proportion as the alleviation of the diſeaſe, brought on by every blood-letting, was more evident though ſhort; and in proportion as the diſtenſion of the veſſels, even the ſmalleſt veſſels, of the brain, was more manifeſt; as it was perceiv'd to be in a very great degree, even from the compreſſion of the ſpinal marrow: for very ſeldom is it poſſible to preſs the blood out of the very ſubſtance of that marrow.

Add to this, the acrid particles which get into the blood of a man employ'd in ſo ſordid an art; ſo that thoſe which ſhould be diſcharg'd, during the detention of this fluid, might irritate and vellicate the more.

But in regard to epilepſy and convulſions, enough; eſpecially as many things remain to be added upon the ſubject of the oppoſite diſorder, that is, paralyſis.

7. An old woman; leſs than eighty years of age, but more than ſeventy; was ſuddenly ſeiz'd with a very violent apoplexy. She was immediately brought into the hoſpital, with a ſtertor upon her, a weak pulſe, and, what moſt relates to the point in queſtion, with a paralyſis of both limbs.

And there ſhe died within two days, at the ſame hour the apoplexy had come on; which was after the middle of March, in the year 1750.

The upper part of the cranium being ſaw'd round about, the next day, and nothing having been diſcharg'd; before it was rais'd up, I ſaid, in the hearing of a large circle of ſtudents, that, although by reaſon of the conſtitution of this old woman, and her manner of life, and the diſorders to which ſhe had been liable, being unknown to me, I did not take upon me to determine, for a certainty, what we ſhould find to have been the cauſe of the apoplexy; yet I would not deny, that, even in a woman of this age, it might be from blood; eſpecially as the veins in her neck were very tumid therefrom, and the apoplexy had been violent: but whatſoever had been the cauſe, ſo that it conſiſted in any conſpicuous injury of the organs; that it might be conjectur'd, with great probability, from the paralyſis of the right limbs; according to the many obſervations of Valſalva, and mine; that it would appear in the left hemiſphere of the brain.

Then pulling off, from the ſubjected meninx, the arch of the cranium; and ſeeing no morbid appearance in that membrane, but obſerving, ſoon after, the greater part of the veſſels which creep through the pia mater, to be turgid with black blood; and finding a little bloody water about the

lower terminations of the medulla oblongata; I came to the diſſection of the cerebrum, which was firm; whereas the cerebellum was lax.

And firſt opening the lateral ventricle on the right ſide, a conſiderable quantity of water offer'd itſelf to our view; which circumſtance might ſeem to indicate ſomething that did not correſpond to the obſervations mention'd juſt now.

But as, in the whole of that ventricle, I ſaw nothing ruptur'd or lacerated; except ſome part of the ſeptum lucidum; we went on to open the left ventricle.

And the whole of this cavity was fill'd, in part with the ſame bloody water, but in part alſo, and particularly towards the back part, with a conſiderable quantity of black blood; and that coagulated.

And from hence it was evidently perceiv'd, that this bloody water had been preſs'd out from that blood, while in the act of concretion; and had made a way for itſelf through the ſeptum which divides the ventricles one from another, from the left of theſe cavities into the right; which had no appearance worthy of notice, except that the choroid plexus was ſomewhat pale; and diſtinguiſh'd with a great number of hydatids, where it was inflected in an anterior direction: theſe hydatids, however, were of a ſmall ſize only.

But in the left ventricle, the plexus choroides had been ſo injur'd, by the eruption of blood, that it was not poſſible to diſtinguiſh clearly, what the ſtate of it was.

This blood had burſt out from a large cavity to which it adher'd; which cavity was hollow'd out in almoſt the whole of that part of the lacerated corpus ſtriatum, which is extended from the middle of the length thereof, to the poſterior parts; and, at the ſame time, in the lacerated and contiguous thalamus nervi optici, and even almoſt in the whole of it; for but a very ſmall portion of this body, and that of a lurid colour, was remaining at the border of the third ventricle, which was full of that ſame kind of bloody water: and, on the other ſide of the ſame thalamus, the diſcharge of blood had lacerated not only the thalamus itſelf, but ſome contiguous part alſo of the left hemiſphere.

Having carefully diſſected the other parts within the cranium, and found them all in a natural ſtate; ſo that even the arteries had nothing hard in their coats; I nevertheleſs found, that almoſt all the other arteries, and even the carotids themſelves, in the upper part of the neck, were not without bony lamellæ in this old woman.

Nor did I, in demonſtrating and cutting into the ſpinal marrow, in its ſituation, on the following days, find any thing which was preternatural.

The viſcera of the thorax alſo, and the belly, offer'd nothing worthy of remark; if you except the colon, which was inflected, from its ſituation, downwards, in the form of an arch; and that for a conſiderable ſpace: and it was, as the ſtomach was alſo, very much contracted.

A corpuſcle likewiſe was obſerv'd in one of the axillæ, of the form and magnitude of a lupin, and of a middle nature betwixt bone and ſtone; which corpuſcle, if it had not been more near to the pleura than the axillary glands; you would perhaps have ſuppos'd to be made up of one of them.

8. This

8. This diſſection, as well as a great number of others, has confirm'd the aphoriſm of Hippocrates (*), which ſays, that " to ſolve a violent apo-" plexy is impoſſible;" and, at the ſame time, confirms the dogma of Valſalva, whereof I have ſo often ſpoken, and which I have mention'd above: and it has moreover ſhown us, how deſtructive is an extravaſation of blood from the corpora ſtriata, or the neighbouring thalami; or at leaſt from the parts thereabout. All which hypotheſes will alſo be confirm'd by the next hiſtory.

9. A woman, who was already hoary-headed, died about the middle of December, in the year 1756, in the ſame hoſpital, and of the ſame diſeaſe; a palſy having been obſerv'd in her right limbs.

Being about to cut into the cerebrum in its ſituation; and having predicted the ſame thing, as in the former woman, to thoſe ſtudents who remain'd in conſiderable numbers, after I had finiſh'd a general lecture upon the bones; I remov'd the dura mater, and ſhew'd the veſſels, which run through the pia mater, to be very full of blood on the left ſide; where, alſo, ſomething ſimilar to jelly appear'd under that membrane.

Then cutting into the cerebrum, the ſubſtance of which was firm; whereas that of the cerebellum was very ſoft; and having ſeen a little water in the lateral ventricles, but none in the right hemiſphere, nor yet having found in any other of thoſe parts that are contain'd in the ſkull, the leaſt appearance which was contrary to the common order of nature; on cutting deeply into the left hemiſphere, in a longitudinal direction, I found black and coagulated blood to the quantity of two ounces, as we all of us judg'd.

This blood was effus'd at the ſide of the corpus ſtriatum, and under this very body, within the medullary ſubſtance: and although it had lacerated this ſubſtance, yet it had open'd no paſſage, for itſelf, from thence, whereby it might come into the neighbouring ventricle; or on the outſide of the cerebrum. Being buſied with other purſuits, I diſſected no other part of this body.

10. Thus far had I written on the firſt day of January, in the year 1758, when, returning to the hoſpital on the following day, in order to reſume the interrupted anatomical exercitations, I immediately had an opportunity there, of making another obſervation, which muſt be join'd to thoſe of Valſalva's that I have commended.

11. A beggar, of about fifty years of age, whoſe ſpine was in the preternatural ſtate I ſhall deſcribe below, had fallen down in an apoplectic paroxyſm a month before, when he was in the market-place; he alſo having his right limbs paralytic, and his mouth diſtorted.

Being immediately receiv'd into the hoſpital, and venæſections, and other uſual remedies, being made uſe of; he had ſo far receiv'd advantage as to be able to ſpeak a little. But after ſome days had paſs'd, he was again ſeiz'd with an apoplectic paroxyſm; and was again reliev'd by medical aſſiſtances. And finally, by a third attack he was carried off.

In cutting the cranium round about, and pulling it away from the dura

(*) 42. S. 2.

mater,

mater, which adher'd to it very cloſely; nothing worthy of notice having been diſcharg'd, and I having predicted as uſual, to my circle of auditors, which was very much crowded; the event confirm'd my prediction.

For by diſſection there was no-where found any morbid appearance within the cranium, except in the left hemiſphere of the cerebrum. The internal medullary part of which hemiſphere; that was adjacent to the lateral ventricle, being ſeparated by blood; contain'd ſuch a quantity of fluid, in a black and half-concreted ſtate, as a ſpoon of a middle ſize would ſcarcely contain.

But the ſpine of this man was ſo inflected, that I do not remember ever to have ſeen it more ſo, in any body. For, at the lower vertebra of the thorax, it was ſo bent to the right ſide, as to make an angle downwards which was leſs than a right angle; and, at the ſame time, turn'd the bodies of that vertebra, and of four or five of the vertebræ that lay upon it, to the left ſide; ſo that they did not look towards the anterior paries of the thorax, but entirely towards the left ſide.

Indeed the inflection, which was ſeen in all the vertebræ of the loins, in the upper vertebræ of the thorax, and the lower ones of the neck, was much leſs than that I have deſcrib'd.

Nevertheleſs there was a manifeſt inclination of the ſpine, on both ſides, that reſembled a bow; the convexity whereof was, in the loins, on the right ſide, and the concavity in the left; and in the upper part of the back, and the neighbouring cervix, the convexity was on the left ſide, and the concavity on the right.

Finally, I obſerv'd the ligament, which embraces poſteriorly the proceſs of the ſecond vertebra of the neck, that is call'd *proceſſus dentoides*, or tooth-like proceſs, within the firſt vertebra; and in the manner of half a ring; to be grown into one ſubſtance with that proceſs; and particularly on the right ſide: perhaps in conſequence of the continual, or at leaſt the very frequent, poſition of the head, which was more commodious to a man thus form'd.

12. In proportion as this deprav'd figure of the ſpine, which I have deſcrib'd, made an inflexion upon the great artery that adher'd thereto; ſo much did it reſiſt the ready and eaſy flux of the blood towards the inferior parts of the body. The conſequence of this therefore was, that a greater quantity was ſent from thence to the brain; whereby a diſpoſition to a ſanguineous apoplexy was brought on.

Yet this was prevented from being more ſpeedily fatal, not only by thoſe two protuberances, in the baſis of the ventricles, being uninjur'd, but by venæſections alſo opportunely applied; for by theſe it was, without doubt, brought to paſs, that the injury ſhould not be continu'd to thoſe protuberances; and that the effuſion of blood ſhould not be brought on, but ſlowly, ſparingly, and at intervals.

13. And how very frequently I have found the injury, in this ſpecies of apoplexy, in that hemiſphere of the brain, which is oppoſite to the paralytic ſide, not only theſe obſervations, but a great number of others, made by us, confirm; and although the greater part of theſe I have pointed out,

or

or propos'd, in other places (*e*), yet there are ſome, nevertheleſs, which remain; and among theſe one that I ſhall ſend you in the next letter (*f*).

And not only our obſervations, but the obſervations of others alſo, which have likewiſe been referr'd to in other places (*g*); to which you will add that quoted by the celebrated Sulzerus (*h*) from Archibald Adams; and thoſe which Mead (*i*) aſſerts to have been made by him "formerly, more than "once, in the hoſpital;" and the obſervation, at length, which occurr'd to that very experienc'd man Marc Anthony Caldani (*k*), and which is very ſimilar to ours; when after a violent apoplexy, and a paralyſis of the whole right ſide, he ſaw the left corpus ſtriatum eroded in one half of its ſubſtance, and full of grumous blood.

Yet there are ſome obſervations, alſo, of that ſide which is oppoſite to the injury not being paralytic; and of that ſide which is ſubjected to the hemiſphere of the cerebrum, wherein the diſeaſe is, being reſolv'd.

I confeſs there are: nor did Valſalva (*l*) diſſemble it among his obſervations; nor do I diſſemble it among mine (*m*). Nay, in my anatomical epiſtles (*n*) I have produc'd ſeven, that are taken from the books of other authors.

And if, with theſe, you ſhould be willing to reckon one from the excellent Bergenius (*o*), and one or two that you have in the already commended Sulzerus (*p*); I ſhall ſay nothing againſt it: yet I will beg of you to conſider thoſe things which may be replied to many of them: and this I have done to ſome of them (*q*), as Sulzerus (*r*), who had not ſeen my anatomical epiſtles, did afterwards to others; although you may ſuppoſe there to be ſome, to which no objection can be made: and I will likewiſe beg of you to compare the very ſmall number of theſe, with the almoſt innumerable ones of Valſalva, and others.

For by this means you will immediately underſtand, to which of the two claſſes of obſervations, a phyſician, who conſiders what happens for the moſt part, is to have the greateſt regard, and upon which he ought moſt to depend; and not only in theory, but in practice likewiſe: ſo that if, in particular, as Sulzerus (*s*), whom I have often mention'd, takes notice, the trepan is to be applied to the ſkull after having receiv'd a blow, by reaſon of blood, or pus, being extravaſated underneath; and to the other ſymptoms a reſolution of one ſide be added; we may from thence argue the ſeat of the compreſſion, which has taken place in the cerebrum; and conſequently the ſeat of the extravaſation, whereby this compreſſion is occaſion'd.

14. And as to what relates to the cerebrum, I have ſaid enough on that head.

(*e*) Epiſt. II. n. 10. & ſeqq. III. n. 2, 3. 14. & ſeqq. V. n. 7. XI. n. 10. 12. LI. n. 43.
(*f*) Epiſt. 63. n. 12.
(*g*) Vid. eaſd. epiſtolas.
(*h*) De Actione Cerebri decuſſ. § 8.
(*i*) Monit. Med. c. 2. § 2.
(*k*) Lettera ſull' Inſenſitiv. &c. § 51.
(*l*) Tract. de Aur. Hum. c. 5. n. 5.
(*m*) Epiſt. 57. n. 14, 15. & Epiſt. Anat. 13. n. 23. 25.
(*n*) Ibid. eod. n. 25.
(*o*) Ventriculor. Lateral. Cerebri nova Tab. not. *dd.*
(*p*) § 13.
(*q*) Vid. Epiſtolas indicatas.
(*r*) § 16. & ſeqq.
(*s*) § 21.

But

But what if the injury reach to the cerebellum? The queſtion then is, whether, if this injury be in one or other, or about one or other, of the lobes of this body, it bring on an hemiplegia; and if it does bring it on, whether in the oppoſite, or the ſubjected ſide, of the body?

This problem I have propos'd in the third of my anatomical epiſtles (*t*): nor am I ſory that I have made it my general cuſtom, which I even then adher'd to, to determine nothing from any one obſervation; nay indeed, as I there confeſs'd that this obſervation may be explain'd in various ways, I admoniſh'd that we ought to wait for other obſervations, and obſervations of a different kind.

For I afterwards lit on an obſervation of a leſs modern date, and read another new one, in both of which the hemiplegia; correſponding to the injury in one of the lobes of the cerebellum; was in the limbs of the ſubjected, and not of the oppoſite ſide.

Theſe obſervations I have ſpoken of to you in other letters (*u*): although, admoniſh'd by thoſe varieties, which have ſometimes occurr'd in contradiction to the very dogma of Valſalva, which is otherwiſe confirm'd by a great number of clear and conſiſtent examples; I thought it the moſt ſafe and prudent method of proceeding, not to determine any thing very haſtily even from two examples; but previouſly to add thereto ſtill others and others, which might ſhew the ſame thing: for this Valſalva did before he made his opinion public.

I am not ignorant; if you ſhould chuſe to take the whole of the circumſtances into conſideration, as you ought to do; that theſe examples occur more rarely than thoſe which relate to the cerebrum; as you may have learn'd from the remarks that I have made, in regard to a certain obſervation of mine (*x*), wherein I have found no very ſmall cavity within one lobe of the cerebellum, and that very full of blood: and you may learn it from a ſecond obſervation that I have promis'd you there; and in another place alſo (*y*); and this I will immediately communicate.

15, A man, about eight-and-forty years of age, who had been accuſtom'd to make uſe of lighted charcoal, even more than his buſineſs, which was that of a cook, requir'd; and to ſtand very near to theſe fires with his head over them; had begun to complain of very acute pains in that part a year before.

To theſe pains was added a debility of both the lower limbs likewiſe, to ſo great a degree, that he could no longer ſupport himſelf upon them. In conſequence of which affection; and thoſe pains, join'd with a ſlight fever that had lately come on; being oblig'd to confine himſelf to his bed, and, finally, to ſend for a phyſician, blood was firſt drawn from his arm, and then from his foot; and that for this reaſon alſo, that he now-and-then labour'd under a ſlight delirium: and the fever indeed was ſolv'd by this means; but all the other ſymptoms continu'd.

The phyſician being diſmiſs'd, he went on to make uſe of the cephalic remedies that he had order'd; but ſo far to no purpoſe, that, after having

(*t*) N. 23.
(*u*) Epiſt. 52. n. 27.
(*x*) Epiſt. 60. n. 7.
(*y*) Epiſt. 52. n. 26.

kept

kept his bed at home for four months, being afflicted with all the diſorders that I have now mention'd, and for that reaſon, at length, brought into the hoſpital, he there liv'd no more than ten days.

His pulſe was tenſe and vibrating; though in other reſpects moderate and never febrile. His reſpiration was natural, as his appetite for food alſo was. And although the lower limbs, as far as motion was concern'd, were paralytic; yet neither the upper limbs, nor any other parts of the body, were attack'd with an affection of that kind.

In the day-time he ſlept for the moſt part; but in the night was, in a ſlight degree, delirious. Venæſection having been made uſe of in the arm amongſt other remedies of no effect, and a few days after that, venæſection in the foot alſo; it happen'd that he died on the following night, without having given any ſigns of his approaching diſſolution, through the whole of that day: and indeed, having taken his dinner, as he had been wont to do, and even a part of his ſupper in the beginning of the night, it was ſuddenly obſerv'd that he was giving up the ghoſt.

When he was in his perfect ſenſes; as he was at intervals, though not at all for the moſt part; he us'd to ſay to his ſiſter while he was at home frequently, and had ſaid to others, while he was in the hoſpital, that he wiſh'd his ſkull might be open'd after death; in order that the cauſe of his violent and obſtinate diſorder might be found out.

And this was done by me on the following day; that is, on the eighth of January, in the year 1754; being attended, during the diſſection, by many who had remain'd in the hoſpital-theatre after the anatomical lecture was finiſh'd.

While the head was cut off, and the ſkull cut open, a quantity of water had flow'd out. Before I cut into the brain, and ſtill more after I had diſſected it, I ſhew'd that the cavity of the cranium was oblique in this man; and that the left ſide of it, particularly at the poſterior part, was more diſtant, and that conſiderably, from the middle, than the right.

The veſſels which creep through the meninges, and through the parietes of the lateral ventricles, had a greater quantity of blood than they naturally have: and this was demonſtrated, in reſpect to the ſmall veſſels which paſs through the medullary ſubſtance of the cerebrum, by the bloody points being more than uſually conſpicuous.

That ſubſtance indeed was pretty hard in the hemiſpheres. On the other hand, the corpus calloſum was lax. But the former, and the medullary tract, which is drawn before the columns of its baſis, were ſtill more lax; and thoſe columns lax in a very great degree; ſo that their ſubſtance might ſeem to be diſſolv'd. The corpus ſtriatum, on the left ſide, was more lax, alſo, than the right. But the ſeptum lucidum was pretty firm.

In the three anterior ventricles was a great quantity of limpid water; and therein the alæ of the plexus choroides floated, but were not of a pale colour. The pineal gland; which was diſtended with the ſame water, and eaſily ruptur'd, in raiſing up the middle part of thoſe plexuſſes; left nothing of itſelf behind, but a very ſmall part of its baſis; which was affix'd to its ſeat.

The third ventricle ſeem'd to be ſhorter than it naturally ſhould be; but

the fourth ventricle certainly appear'd to be longer than it generally is, after the cerebellum had been cut through the middle, in the uſual manner, and laid aſide on one hand and on the other.

And in cutting this ſubſtance in the manner I have ſaid; I found a circumſtance of diſeaſe, which the ſurface thereof, that was ſimilar to what it generally has, did not ſo much as ſuffer me to ſuſpect.

That is to ſay, no ſooner had I proceeded, with the knife, to the depth of a finger's breadth, but, perceiving an unuſual reſiſtance, I ſtood ſtill, and drawing aſunder that part which I had cut into, was very much ſurpriz'd that no mark of the medullary tree or ſhrub appear'd; but that in its place were parallel medullary ſtriæ, drawn betwixt the cortical ſubſtance: from which ſtriæ no ſmall branches were, in any place, ſent forth.

Then attempting the diviſion with a ſharper and ſtronger knife; whatever remain'd of the middle ſubſtance of the cerebellum, I cut aſunder, quite down to the fourth ventricle; and began to ſee that diſorder, on account of which, chiefly, I deſcribe to you this obſervation.

It was a ſubſtance not ſoft, not of two colours, nor cut betwixt with deep and very frequent ſulci; but a ſchirrhous ſubſtance, and of one colour, which approach'd pretty nearly to that of a very dilute fleſh-colour; being made up of roundiſh corpuſcles, as it were, ſo compacted one with another, that there no-where occurr'd any interſtice, no membrane, no ſanguiferous veſſels.

A diſorder of this kind extended itſelf, on the one hand, towards the right ſide in ſome meaſure; and, on the other hand, through almoſt the whole left lobe of the cerebellum.

For if you excepted the ſurface of this lobe, which was made up of its natural ſubſtance; that was in ſome places very little, and at the lower part none at all; all the remaining part was occupied by juſt the ſame diſorder: and at the lower part in particular it was cloſely connected with the dura mater; ſo that the diſorder might be ſuppos'd to have taken its origin from that place, and to have been propagated, from thence, into the other parts whereof I have ſpoken.

And the right lobe, although it conſiſted of a ſoft ſubſtance, and that double, alſo; I mean a cortical and a medullary ſubſtance; nevertheleſs did not ſhew, when cut into tranſverſely, that diſpoſition of both theſe ſubſtances, which it is wont to do in other bodies; but a diſpoſition evidently different therefrom: although not to ſuch a degree as that middle part of the cerebellum; which, where it was ſoft, and made up of a double ſubſtance, offer'd ſections ſo very different from what we have always ſeen, as thoſe of which I have juſt now given you a deſcription.

Nor could I obſerve any thing more that was contrary to the ordinary appearances of nature; notwithſtanding I diſſected all the parts accurately, and in their ſituation likewiſe.

But I had no time to examine any other part in this body.

16. From what part this ſchirrhus of the cerebellum might ſeem to have taken its beginning, has been already hinted. But whether it began on the left ſide for this reaſon, that the cavity of the cranium was there immoderately large; I ſhall no more take upon me to ſay, than from whence the unuſual

diſpoſition

diſpoſition of the medullary ſubſtance; through the right lobe, and that middle part of the cerebellum; took its riſe, or occaſion.

For that the caſe had been thus from the original formation, or from birth, does not ſeem credible, in him who liv'd ſeven-and-forty years without any complaint of his head.

It is rather probable; to paſs on to other things; that as the ſchirrhous diſorder increas'd, and leſs and leſs blood was admitted into that whole part of the cerebellum, wherein were no longer ſeen any of the great number of veſſels, which go down here and there deep betwixt the ſegments (here entirely obliterated) in all bodies; ſo much the greater quantity of blood was propell'd both into the external, and into the more internal, veſſels of the cerebrum; and that, from thence, not only the pains, but the frequent ſlight deliria aroſe: and finally, that from thence, when at the ſame time a great quantity of water flow'd down upon the cerebrum, death was brought on.

All which circumſtances might the more eaſily happen, not only on account of the buſineſs wherein the man was continually occupied; and his too incautious method of exerciſing it; but alſo on account of that deprav'd diſpoſition of the brain, to which the other circumſtances had been added: and this diſpoſition is ſhown by the irregular figure of the cranium; whether this was brought about in the uterus, or in its exit therefrom.

For I believe that this happens very frequently when, in a difficult birth of the infant, the head thereof is long detain'd in a ſtreight paſſage; and the unſkilful and regardleſs midwives; after having deform'd, by a rude and unequal preſſure, the head which they had violently laid hold of, and dragg'd forth; are either entirely ignorant how, or do not take any care, to reſtore it into a natural form, by a proper and gentle application of the hands.

And how much injury then ariſes to the tender ſtructure of the cerebrum and cerebellum; and not then only, but afterwards alſo; when, by increaſing within an ill-form'd cranium, it is under a neceſſity of accommodating itſelf to the figure thereof; you will, without doubt, readily perceive, though I ſhould ſay nothing on the ſubject.

Nor becauſe, when I found a ſimilar conformation; except that the cavity of the cranium was larger in the occiput only, and not on the left ſide, but on the right; in another man (z), I did not know that the man had been ſubject to diſorders of the brain; nor yet that an old man, diſſected by me in the hoſpital, about the beginning of the year 1755, whoſe forehead was ſo prominent on the right ſide, and his occiput on the left ſide, that the longeſt axis of the cranium was very oblique; nor that this old woman, I ſay, had been ſubject to any ſuch diſorders; will you, therefore, of courſe ſuppoſe, that they were not liable thereto: for it is not eaſy, in regard to obſcure and unknown plebeians, to learn after their deaths all the complaints they ſuffer'd while living.

Nay, rather ſee in what ſtate the cerebrum was in two women; one of whoſe ſkulls (a) I found to be in a ſtate of male-conformation, as in the

(z) Epiſt. 53. n. 26. (a) Epiſt. 1. n. 14.

man; and that of the other (*b*) ill-form'd, as in the old man; and read with what ſevere pains of the head the firſt was troubled: to the obſtinacy and long continuance of which, how much a deprav'd figure of the head contributes, you will even learn from the opinion of others (*c*).

Add to theſe the little boy (*d*), the poſterior part of whoſe cerebrum ſeem'd not to approach to the figure of a ſphere; but rather to the ſuperficies of a cube; and who was carried off by convulſive motions: and add the woman alſo (*e*), in whom the cavity of the cranium was very narrow, in proportion to its length; who had been, probably, ſeiz'd more than once with an apoplexy; but at leaſt had been kill'd thereby.

And if you ſhould think proper to ſay, that other cauſes had been added to the male-conformation of the head; and theſe of an external kind; why then you would ſay the very ſame thing that I ſay of the cook in queſtion.

17. And if to the ſchirrhus of this man's cerebellum; neglecting all the other diſorders that were in the brain, as if none of their beginnings could have exiſted before the paralyſis; contrary to what is ſhown by thoſe very acute pains of the head which had preceded; if to this ſchirrhus alone, I ſay, you ſhould chooſe to impute the paralyſis; you will ſeem not to have remember'd, that not only the lower limb, which was ſubjected to the ſchirrhus, was reſolv'd, but both of them equally ſo: which circumſtance, beyond a doubt, is the reaſon why that, which I ſaid had occaſion to be confirm'd by other obſervations (*f*), certainly cannot be confirm'd by this.

And we ſhould have been prevented from making the ſame concluſion, by other circumſtances, in two obſervations, wherein I have deſcrib'd one or other part of the cerebellum, either as moſt injur'd, or ſolely injur'd; by blood being extravaſated within it, or by an eroding pus being collected about it: and theſe in the ſecond (*g*) and the fourteenth letter (*h*). For in one of them it could not be obſerv'd whether there was any hemiplegia or not: and in the other there certainly was none.

18. But the hiſtory of the cook that is deſcrib'd, ſay you, will at leaſt confirm that which learned men now produce, in ſeveral places, againſt thoſe functions which were attributed to the cerebellum by Willis.

For with ſo great a diſorder of that viſcus, the reſpiration and appetite for food were in their natural ſtate in this cook: and the pulſe itſelf was tenſe and vibrating; being in other reſpects in a moderate ſtate.

As to me, however, though I do not allow of every thing that Willis has ſaid of the cerebellum; yet I now-and-then fear, leſt ſome perſons ſhould detract too much therefrom.

Wherefore, if I have given any hint in favour of this viſcus, in my letters to you (*i*); particularly before the objections againſt it had ſo much encreas'd; I would have you conſider them in ſuch a light, as to ſuppoſe that

(*b*) Ibid. eod. n. in fin. & Epiſt. 12. n. 2.
(*c*) Epiſt. 1. n. 15.
(*d*) Epiſt. 10. n. 9.
(*e*) Epiſt. 3. n. 6. 7.
(*f*) n. 14.
(*g*) n. 22.
(*h*) n. 3.
(*i*) Epiſt. 2. n. 24.

I judg'd

I judg'd it proper not to be entirely of a contrary opinion to others; but to go on cautiouſly and warily in the change of this doctrine alſo, as well as of others.

Nor was I influenc'd by any other motive; when it was my buſineſs to write upon wounds of the cerebellum (*k*); not to omit thoſe things which you have read there; nor thoſe things in like manner, which relate to injuries of the ſame viſcus, that are not inſtantaneouſly brought on as wounds are, but happen in ſome ſhorter or longer ſpace of time (*l*); ſuch as ſchirrhi in particular. Which things, as you may read them over again, I ſhall not repeat here.

But do not imagine that; when I found this very great diſorder in the cerebellum, which I have ſo accurately and ingenuouſly deſcrib'd to you; I was leſs ſurpriz'd than you have been in reading it, that the man's reſpiration and pulſe were in that ſtate, which, upon diligent enquiry, I found them to have been.

For certainly, I ſaw plainly that more was aſcrib'd to this viſcus, before theſe later times, than was proper; and that thoſe excellent men were to be commended, who have admoniſh'd us, that we ought not to aſcribe ſo much thereto.

And indeed it appears, that, as leſs importance is to be attributed to ſome other parts of the body, in another reſpect, than in former times; ſo leſs is to be attributed to the cerebellum than heretofore. Yet how far that importance is to be diminiſh'd, deſerves conſideration: and this I think our poſterity will be better able to determine upon than we are at preſent. Farewel.

LETTER the SIXTY-THIRD

Relates to Blindneſs, to Aphonia, and Angina.

1. ALTHOUGH, beſides thoſe obſervations which I had publiſh'd before (*a*), I have ſent to you more than one (*b*) of my obſervations upon blindneſs; but one, and no more, that related to aphonia (*c*); and one, in like manner, that related to angina (*d*); yet it has ſo happen'd, that out of thoſe which I have made ſince that time, I can deſcribe to you only one

(*k*) Epiſt. 52. n. 27.
(*l*) Ibid. n. 26.
(*a*) Epiſt. Anat. 18. n. 22. 38. 40.
(*b*) Epiſt. 13. n. 8. 9. 15.
(*c*) Epiſt. 14. n. 35.
(*d*) Epiſt. 44. n. 3.

that relates to each of the two laſt-mention'd diſorders; whereas I have many that relate to blindneſs, with which I therefore ſhall begin.

2. The eye of a certain old woman was brought to me, amongſt a great number of others, to be made uſe of in the public anatomical demonſtrations of the year 1747: which I the more willingly took upon me to diſſect, becauſe the figure of it, that was not ſo much ſpherical as it naturally is, ſhow'd it to have been blind; and the greater part of the cornea was very opaque from large white ſpots.

The choroides adher'd more cloſely than uſual to the tunica ſclerotica; eſpecially in the poſterior part. The anterior ſurface of the chryſtalline humour was unequally hollow'd out in the middle; and that to a conſiderable depth: the other parts of the ſame humour, although, when held up againſt the light, they reſembled yellow amber, were ſound nevertheleſs, if conſider'd in reſpect to that age.

When I attempted to remove the iris from the cornea; I found that I could not remove the whole of it; particularly in the middle. For, altho' it adher'd from one ſide quite to the middle, and even beyond the middle of the cornea; yet it adher'd no where ſo cloſely as in the middle, where that ſurface of the cornea was unequal, and had a lamella beginning to abſcede, as it were, and protuberating inwards in ſome meaſure; whereas the external ſurface was ſmooth: nor could I obſerve any other preternatural appearance therein, except ſome very minute points as it were, and theſe rather obſcure.

3. And this being the ſtate of the parts; and no cicatrices being ſeen any where on the external ſurface of the eye; juſt as in another eye, which that celebrated anatomiſt Phil. Conr. Fabricius (*e*) diſſected, and which had other circumſtances that deſerve to be read by you, but did not agree with this of mine, in the ſeat of the excavation of the chryſtalline humour; it was not very difficult for me to refer all the diſorders that I have deſcrib'd, to an internal cauſe, which had formerly preceded; whether that had been an inflammation, or any other cauſe whatever.

On the contrary, I was much in doubt, whether; in an eye which I likewiſe diſſected in the college in the following year; all the circumſtances that I ſhall immediately enumerate, were to be imputed to a cauſe of this kind.

4. The eye of a man had its cornea opaque, for a long time together, as it ſeem'd; and this part likewiſe retain'd ſlender indeed, but evident, traces of a cicatrix.

The chryſtalline humour was connected with the coat juſt now mention'd; yet was not hard, although it had decreas'd to ſuch a degree, that ſcarcely a fourth part of it remain'd. The uvea was not in a very bad ſtate; but the vitreous humour and the retina were in a much worſe ſtate. The optic nerve, being become very ſlender, inſtead of the medullary ſubſtance, contain'd in the whole of that tract, which had lain within the orbit, a ſomewhat white and cloſely compacted ſubſtance. But of what nature it had been within

(*e*) Progr. quo Obſ. Anat. recenſ. A. 1754.

the

the orbit, I could not learn; as the brain had been inconſiderately buried ſome time before.

5. How much I was chagrin'd by this diſappointment; and why I was chagrin'd thereby; you will eaſily gather, both from what I have written in the anatomical epiſtles (*f*), and in other places (*g*) alſo, to you. And I was the more pleas'd therefore, at leaſt in the beginning, when an occaſion preſented itſelf to me; in the hoſpital; in the following year 1749, about the beginning of January; of purſuing that nerve, from a blind eye, within the cranium.

Which obſervation, as it is one of the two that I formerly referr'd to (*h*); and as I had ſent the other to you afterwards (*i*), but have not ſent this to you yet; ſhall now be accurately deſcrib'd.

6. A man had formerly, when a boy, had his right eye ſo very much affected by the ſmall-pox, as to ſee nothing therewith. But his parents, by licking it with the tongue, for a long time together, had been ſo far of advantage thereto, that it at length ſaw a little, yet very obſcurely. Nor did this eye, from that time to the very day of the man's death; that is, to ſome time in his fortieth year; ever ſee more diſtinctly.

And, indeed, this eye was not only leſs than the other, but even the cornea itſelf; in which, in other reſpects, there appear'd to be no trace of injury, ſo that the whiteneſs which was behind it, might be clearly ſeen through it; was not equal to the other cornea.

Having therefore but ſlightly cut into the tunica ſclerotica on the back-part; a quantity of limpid water immediately flow'd out: into which water a great part of the vitreous humour might ſeem to have degenerated; whereas the remaining part, which was in ſome meaſure ſimilar to the humour in its natural ſtate, had remain'd annex'd to the chryſtalline humour, as it generally does: and this humour follow'd it when I drew it backwards.

This chryſtalline was ſmall in every dimenſion; and even ſomewhat leſs in thickneſs, than was ſuitable to an eye of that kind. On its anterior ſurface it was white in the middle, as I had ſeen it through the cornea; in other reſpects, it was of a whitiſh colour: and when I compreſs'd it ſlightly betwixt my fingers, it was ſoft.

But when I had begun to cut into the coat of this humour, water immediately burſt out; having nothing purulent in it, but being even pure and limpid, and in ſuch a quantity, in proportion to the ſmallneſs of the chryſtalline, that this humour was immediately reduc'd to a much leſs thickneſs.

Whatever remain'd of its ſubſtance, retain'd its priſtine lenticular figure: and when I had cut it through according to its diameter; both ſections ſhew'd a ſeries, as it were, of very ſmall blackiſh particles, which was carried directly through the middle, from one extremity of the ſection to the other; whereas, in every other part, the colour appear'd of a dirty and obſcure white. The other parts of the eye were not in ſo bad a ſtate.

In the upper eye-lid, the ſebaceous glands; which I had ſeen, in the

(*f*) XVIII. n. 40.
(*g*) Epiſt. 13, n. 7.
(*h*) Ibid. n. 10.
(*i*) Epiſt. 52. n. 30.

former

former man (*k*), to be even more beautiful and more thick than uſual; I obſerv'd, in this man, to be leſs conſpicuous than they generally are; perhaps by reaſon of the ſmall pox: yet I plainly ſaw two, very near to each other, which had mutual decuſſations towards the upper part.

And this circumſtance I was willing to take notice of here, in order to ſhew you, that ſome perſons, who (without attending to this, I ſuppoſe, that when a figure of any appearances, which were not well repreſented before, is given, theſe things muſt be deſcrib'd from a body, wherein they appear in the moſt elegant manner, whereas in mine there was not one repreſentation as it were, but a manifold one) would complain of the want of thoſe varieties which they ſolicitouſly enumerate, were nevertheleſs ſtrangers to this of which I have juſt now ſpoken.

But now let us go on to that circumſtance, for the ſake of which, chiefly, I write this obſervation to you. The optic nerve that belong'd to the deſcrib'd eye, contain'd a medullary ſubſtance indeed, under its thicken'd coats, where it lay within the orbit; but this ſubſtance was thinner than it naturally is: and if you compreſs'd it, you found it to be more moiſt than uſual, as if it had a quantity of water mix'd with it.

But within the cranium, the ſame nerve was quite in a natural ſtate; except that where it was join'd with its fellow, there it ſeem'd to be ſomewhat leſs thick than the latter: but above that place; for I trac'd it up as high as I could go; I did not even obſerve this difference, nor any other whatever; notwithſtanding I enquir'd by every kind of means: nor could others, who had been exercis'd by me in anatomical purſuits, and examin'd it very attentively, diſtinguiſh the leaſt difference.

7. In regard to water being found by me, at other times alſo, in the place of the whole vitreous humour; not to mention the poſterior part of it; you may ſee what I have ſaid on this ſubject, in my anatomical epiſtles (*l*): and in regard to the optic nerve which goes to a blind eye, you may ſee what I wrote in the places referr'd to above (*m*).

But as, when I was treating upon this ſubject (*n*), I promis'd you two obſervations, from whence you might, not without admiration, perceive, that there are ſometimes diſorders of this nerve; and even that very extenuation itſelf; and yet no blindneſs of the correſponding eye; and as I have hitherto only ſent you one of thoſe obſervations (*o*); you will now have the ſecond.

8. In diſſecting the carcaſe of an old man, who died in the hoſpital, in the beginning of the year 1752, of a cachexy, as was ſaid; although this was not done with a view to inveſtigate the cauſes of his diſeaſe; I nevertheleſs remark'd the following preternatural appearances.

The thorax had no extravaſated water in it, as the belly had not likewiſe: but the lungs were not without hardneſs; particularly the left lobe, which, moreover, adher'd to the ſpine very cloſely.

The upper part of the cranium, which could not be pull'd away without force, was hollow'd out, on the inſide, with a greater number of pits, or

(*k*) N. 4.
(*l*) XVIII. n. 38.
(*m*) N. 5.
(*n*) Epiſt. 13. n. 11.
(*o*) Epiſt. 56. n. 21.

cavities,

cavities, than uſual, in the os frontis, and in one of the oſſa ſincipitis; moſt of them being ſmall indeed, but three of them very large and deep; two of which belong'd to the firſt-mention'd bone, and the other to that laſt ſpoken of: and that in this bone, as well as thoſe in the other, was not only cover'd over with a thin lamella externally, but with one ſo very thin, that it appear'd to be perforated with ſmall foramina.

And from hence you plainly perceive, how eaſily this cranium might have been broken through, and with how much danger even from the ſlighteſt blows, not to ſay from the trepan of the ſurgeon, if it had happen'd to have been applied thereto; as under this lamella was nothing more than a few bony fibres, diſpos'd into the form of a reticular web, wherewith the dura mater, that inveſted theſe cavities, was intangled: and from hence aroſe that conſiderable difficulty in pulling away the cranium.

But I do not deſcribe theſe appearances to you, becauſe I ſhould ſuppoſe them to have been the effect of a foregoing diſeaſe; whereof there did not here appear the leaſt token; rather than the work of nature herſelf; forgetting thoſe things which I have hinted in regard to theſe cavities, when writing to you on a former occaſion (*p*); but becauſe they were both very large, and no protuberance was prominent from the ſubjected meninges, made up of the corpuſcles which were call'd glandulæ Pacchioni; not one of which was in this ſubject, although protuberances of this kind, as I then aſſerted to you, are wont, at other times, to be receiv'd within theſe cavities.

However, although in the diſſection of the cerebrum, I found the ſeptum lucidum, and the fornix, moſt immoderately lax; and even, betwixt the two laminæ of that ſeptum, found a little water; and in the lateral ventricles, a water ſimilar to that wherein freſh meat has been waſh'd; though not in great quantity indeed, nor join'd with a paleneſs of the plexus choroides; yet I found the ſubſtance of the cerebrum itſelf, and of the medulla oblongata, and nerves, ariſing therefrom, to be pretty firm, and quite in a natural ſtate,

And I was, for this reaſon, the more ſtruck with the ſtate of the optic nerve on the right ſide; which, being perfectly ſound, quite to its union with the left, and entirely ſimilar thereto, appear'd, inſtantly after this conjunction, to be very evidently leſs thick than the left; and to be inclin'd to a cineritious colour: and in this manner it went on to the orbit.

Wherefore I immediately enquir'd, whether this man had been blind of his right eye: and as this queſtion was poſitively anſwer'd in the negative, I examin'd that eye, and found it to be no leſs beautiful, and ſound, than the left: nor did I ſee that the optic nerve of that eye differ'd any more from the left, within the orbit, than that it was certainly ſomewhat leſs thick.

9. But deferring thoſe circumſtances in the explication of which there may be ſome difficulty, to another occaſion, let us now return to thoſe things that are more eaſily accounted for: and after having added another obſervation, we will ſubjoin a certain conjecture.

(*p*) Epiſt. 8. n. 3.

10. The eyes of a miller; who was ſaid to have been blind, and yet was wont to walk through the city, without any other guide than his ſtick; were brought to me to be diſſected in the hoſpital, about the latter end of the year 1755. When look'd upon externally, through the cornea, they ſeem'd to be turbid rather than white.

I found both the chryſtalline humours to be ſomewhat opaque: yet not ſo as to be more opaque in ſome places, and leſs in others; but to be equally opaque every-where. Under the finger, and betwixt the fingers, both of them ſeem'd to be hard in an equal degree. Nevertheleſs one of them, which was the more ſlender, had its ſubſtance the more dry and more compact.

The other, which was the thicker, was more moiſt than it naturally is; ſo that it ſeem'd to diſcharge the whole of its moiſture upon diſſection: yet this moiſture did not burſt forth, but exſude. One of them; for which it was my notes do not ſay; had a pupil of a pretty large diameter correſponding to it; and the other a pupil of a ſmall diameter.

11. If you ſhould wiſh for other examples of opacity, not ſo much of the chryſtalline humour, as of its coat; you may have them from the celebrated Haller (*q*). In reading of whoſe obſervations (*r*), and thoſe of the celebrated Zinnius (*s*), which confirm the exiſtence of the *membrana pupillaris*, found by the moſt excellent Wachendorffius (*t*); it ſeem'd that I might very eaſily conjecture, what that "kind of membranaceous integument, laid over "the pupil, from the body of an infant, and having even the ſmall arteries "which creep through it fill'd with the moſt liquid wax," which was ſhewn to that eminent man Richard Mead (*u*), was; notwithſtanding he made uſe of it to prove, that the cataract was ſometimes, though very ſeldom indeed, found to be really membranous: that is to ſay, when "any little thin mem-"brane has, by any misfortune, happen'd to contract a ſtate of dryneſs."

I therefore think it very probable, that the pupillary membrane, being, in ſome fœtuſſes, very thick, and adhering firmly to the iris, cannot be diſſolv'd, and vaniſh before birth; but remains there, and cauſes the pupil to be ſhut up from the birth, and for that reaſon brings on blindneſs; juſt in the ſame manner as deafneſs is brought on by any very thick matter, which, adhering cloſely to the membrana tympani, does not fall out from the meatus auditorius of new-born infants; as it generally happens in others, in the manner I have mention'd, in more than one place, in the Anatomical Epiſtles (*x*).

There are other diſorders alſo; and thoſe even internally ſeated; which may be ſet in a much clearer point of light, by comparing the organs of hearing and of viſion with each other: but thoſe things that happen to the eye, may happen ſo much the more eaſily, in proportion as the ſtructure of it is more ſubtle.

And if this circumſtance appear'd from nothing elſe, it might be very eaſily conjectur'd, merely from the different method, in which the all-wiſe

(*q*) Opuſc. Pathol. Obſ. 3.
(*r*) Opuſc. Anat. XIII.
(*s*) Deſcr. Anat. Oculi hum. c. 2. S. 3. §4.
(*t*) Commerc. Litter. A. 1740. Hebd. 18. 1.
(*u*) Monit. Medic. c. 11. S. 2.
(*x*) V. n. 2. & 6. & XIII. n. 3.

Fabricator

Fabricator of our frame, has carried the nervous fibres that adminiſter to the ſenſes of ſmelling, hearing, and ſeeing; that is, the olfactory, the auditory, and the viſory nerves; each into their proper organ.

For he has ſent them into the noſtrils, through the evident foramina of the os ethmoides, and they are conſequently pretty thick; they paſs into the ears by much ſmaller apertures, and are for that reaſon much more ſlender; and, at length, the foramina by which they paſs into the eyes, are, as the moſt modern anatomiſts have ſhewn, extremely ſmall, and theſe fibres of courſe extremely ſlender; ſo that the great Author of our exiſtence ſeems to me to have pointed out, by a kind of gradation as it were, the ſubtle, the more ſubtle, and the very ſubtle, fabric of each of theſe inſtruments of the ſenſes. But theſe things I ſhall perhaps ſpeak of more at large on another occaſion.

Now let us paſs on to the diſeaſes of thoſe parts, which were form'd for the purpoſes of ſpeaking, and ſwallowing; as we have promis'd; and particularly to thoſe of the nerves that go to theſe parts.

12. Of a fatal aphonia after drunkenneſs, I have written to you on a former occaſion (*y*); when I likewiſe ſent an obſervation of mine join'd with a diſſection. I ſhall here add another.

13. A ſervant-man; who was about ſixty years of age, of a tall ſtature, and a good habit of body, but much given to drinking; having been often receiv'd into the hoſpital before; once on account of a violent venereal gonorrhæa, in the courſe of which ſo great a quantity of virulent humour had been diſcharg'd, that he complain'd of a weakneſs in his loins; but having been brought there, more than once, by reaſon of being ſpeechleſs after drunkenneſs, and yet having gone away in good health the following day, this aphonia being diſcuſs'd together with his drunkenneſs; was at length brought thither again from the ſame cauſe.

At this time, however, he had lain in the road in the night, and was taken for a dying man; and indeed his pulſe was very low: and although, after being brought into the hoſpital, he vomited up a great quantity of wine; yet he never more utter'd a ſingle word.

And indeed, being ſeiz'd, on the following day in the morning, with a violent fever, and being, beſides that, depriv'd of the faculty of feeling, and moving in the left upper limb only; for the other parts appear'd to have feeling when ſtimulated; he had ſome blood taken away, and ſeem'd to reap ſome little advantage therefrom: but even eroding plaſters, of the kind that are call'd veſicatories, being, at length, applied to the legs, and being not of the leaſt effect, he continu'd ſpeechleſs in the ſame manner he had been brought into the houſe, to the very hour of his death; which happen'd, without the leaſt convulſion at any time being obſerv'd, on the beginning of the fourth day: and this was the fourteenth of March, in the year 1756.

I could not examine the body before the ſeventh day after death, on account of being detain'd at home, by a ſudden and unforeſeen knee-gout;

(*y*) Epiſt. 14. n. 34. & ſeqq.

and, as I fear'd leſt I might be detain'd there for a much longer time, I order'd that the head at leaſt, and the penis, together with part of the annex'd bladder, ſhould be preſerv'd.

While the head was divided from the body; which was done in the ſpace of two days after death; a great quantity of black and denſe blood had flow'd out. And for this reaſon I was the leſs ſurpriz'd, that upon, at length, opening the cranium, the veſſels of the pia mater were ſeen, by me, not to be diſtended with blood.

In the right lateral ventricle I found a great quantity of water: the plexus choroides was of a pale colour; and where it bends itſelf in an anterior direction, was increas'd in its bulk, by the addition of ſmall but very thick-ſown hydatids.

In the left ventricle was much leſs water, and fewer hydatids. Yet from this difference betwixt the two ventricles, that paralyſis, on the right ſide, had not proceeded. For although, beſides the cerebellum, and the medulla oblongata, the left hemiſphere of the cerebrum was in a proper ſtate alſo; I nevertheleſs found a ſomewhat round and ſmall cavern in the right hemiſphere, capable of containing a ſmall walnut, and full of black blood.

This cavern was not only contiguous to the external ſide of the corpus ſtriatum, and the thalamus nervi optici, but alſo occupied ſome part of both theſe bodies; yet ſo as not to open within the ventricle. And, after examining theſe parts, I turn'd my reſearches to that lower part of the bladder, and the annex'd urethra.

The coats of the bladder were pretty much thicken'd, in conſequence of the patient's having labour'd under a difficulty of urine, at the time of being affected with the gonorrhœa. And, on that internal ſurface of the bladder, ſuch a number of ſanguiferous veſſels tended towards the orifice, and were ſo diſtended with blood; that you would, at firſt ſight, have ſuppos'd as many hæmorrhoids to be prominent there, and covering that place, as there really were congeries, or groupes as it were, of parallel veſſels.

Having open'd the urethra, from that orifice quite to the termination thereof; I found no ulcer in any part; nor even any colour but what was natural. And indeed, although I preſs'd out a kind of putrid matter from the orifices of the proſtate gland, that was of a white colour, inclin'd to cineritious; I imputed this appearance to the delay of ſo many days: but the other appearances, which I ſhall now mention, I aſcrib'd to the gonorrhœa that had formerly preceded.

In the caruncula ſeminalis, the orifice of my ſinus was conſiderably lax; and the ſinus itſelf was longer than it generally is. And from both ſides of the caruncle were ſome parallel lines, that paſs'd in a longitudinal direction. But theſe were very low. Yet not ſo a ring that was prominent from the internal ſubſtance of the urethra, like a faſciculus of muſcular fibres; ſo that it might ſeem to have been capable of being an obſtacle ſometimes to the deſcent of the urine, or to any other fluid.

This ring paſs'd over almoſt the lower part of the beak of the caruncle; being affix'd to this, as well as to the remaining ſurface, and in no part free and unconnected.

Although, about Littre's gland, and that part wherein the orifices of Cowper's glands open, I could diſtinguiſh nothing that was preternatural; I again obſerv'd, in that part which is about three or four inches above the termination of the urethra, ſome white fibres, as it were, which protuberated obliquely; but only in a ſlight degree. Theſe fibres were on the ſides.

And as to what orifices of my canaliculi were in this tract, it was ſufficient to look at them in order to ſee that they had formerly been affected by diſorder; ſo much more were they contracted than the orifices of the others, and ſo different was the neighbouring ſurface, on both ſides, from all the remaining ſurface.

Having deſcrib'd ſuch appearances as related to violent diſorders, I imagine you will not be diſpleas'd with me, if I add a few things that were obſerv'd in the head of this man; one of which relates to diſeaſe indeed, but to a ſlight one only; and three others, though not to diſeaſe, yet to appearances quite unuſual, and, in great meaſure, preternatural.

The firſt was an encyſted tumour, not larger than a ſmall grape, which protuberated in the right temple, not very far from the forehead. It was full of a white matter like milk; but ſomewhat leſs fluid than milk. The cavity of the coat containing that matter, which was of a ſpherical figure, belong'd, in one half of it, to the ſkin; the other half was below the ſkin.

In the ſecond place, there were no pituitary ſinuſſes of the forehead.

In the third place, there were ſphenoidal ſinuſſes of the ſame kind indeed, which however were not divided into the right and left, but into the ſuperior and inferior; the latter of which was the largeſt.

Finally, in the fourth place, the ſtyloid proceſs, on the left ſide, was almoſt four inches long: ſo that it is ſcarcely diſtant by the breadth of a little finger (for I ſtill preſerve it by me) from the os hyoides; this interval being fill'd up by that round ligament, whereby it is connected with this bone; unleſs you ſhould rather chooſe to ſuppoſe, that all the upper part of the ſame ligament was become much thicker than uſual, and converted into bone: for it happen'd to the right ligament alſo, in almoſt the middle of its length, that for the extent of an inch and a half, it became very thick and bony; and that very evidently, as there is nothing either above or below but ligament.

14. But whether we are at liberty to deny the exiſtence of this ligament; as Weitbrecht (*z*) has made no ſcruple of doing; it is not the proper place to diſpute here.

I will only ſay, by way of objection to him: it were to be wiſh'd, that, before he denied this exiſtence, he had lit (if not upon the appearances which I juſt now deſcrib'd) at leaſt upon a ſeries of little bones, ſuch as Veſalius (*a*) and Euſtachius (*b*) have repreſented in their figures as having been ſeen by them; and as I have in great meaſure ſeen: which little bones are ſo form'd and connected, and go on ſo directly from the ſtyloid proceſs to the os hyoides, that you may perceive them to have been parts of that liga-

(*z*) Syndeſmolog. S. 6. §. 15. & ſeqq.
(*a*) De corp. hum. fabr. l. 2. c. 13.
(*b*) Tab. 47. Fig. 14.

ment;

ment; which at firſt became cartilaginous, and then, as the appendices of the very ſame bone are wont to do, were themſelves chang'd into bone likewiſe; ſtill preſerving the place and function of the ligament whereof we ſpeak.

But Weitbrecht ſeems never to have lit on any thing more than "one or "two bony granules, form'd" upon the os hyoides (*c*).

We will conſider therefore, on another occaſion, how far we ought to indulge his opinion, where we ſhall examine other things likewiſe that relate to the ſame bones; as, for inſtance, that which has fallen even from ſome of my predeceſſors, that the ligament, of which we are ſpeaking, is inſerted into the appendages added to the extremities of the apices of the horns; and, in like manner, whether theſe other appendages, or at leaſt thoſe which are frequently form'd upon the very ſhort ligament, which connects thoſe extremities with the upper proceſſes of the cartilage thyroides, have been ſo neglected by anatomiſts, as ſome learned men ſeem to believe, who forget our Fabricius ab Aquapendente (*d*), Bauhin (*e*), and others; and theſe even the more modern authors, as Verheyen (*f*), Winſlow (*g*), and Weitbrecht (*h*); ſome of whom have formerly repreſented them in figures even doubled: others have deſcrib'd them: ſome have propos'd ſome uſe: but almoſt all of them have made mention thereof ſufficiently. But of theſe things, as I have already ſaid, on another occaſion.

It is more to the purpoſe at preſent, to conſider a little while what circumſtances you have read in the hiſtory propos'd, that relate, beyond a doubt, to diſorders, and thoſe not ſlight diſorders neither. For they relate to ſubjects which we have treated of at large in other letters, as that laſt appearance; to begin from thence; which I ſaw in the urethra.

I would, therefore, wiſh you to compare it with thoſe appearances, which we have, at other times, ſeen left after a virulent gonorrhœa (*i*). You will read that protuberating lines occurr'd to me then alſo in the urethra; and that I found the orifices of the canaliculi, not only contracted, but obliterated: from whence we might conjecture foregoing exulcerations and obſtructions oppoſing themſelves to the urine and the catheter, and might clearly perceive what had been frequently, and unjuſtly, conſider'd as caruncles.

But in regard to the little cavern, fill'd with blood, found in that hemiſphere of the brain which was oppoſite to the paralytic limb; and in the neighbourhood of the corpus ſtriatum and thalamus nervi optici; there is no occaſion to point out the obſervations of ours, wherewith you may compare it; as I have already done this in the laſt letter (*k*) I ſent you.

And in regard to the fatal aphonia after drunkenneſs (as I have told you above (*l*), where I have related a caſe of the kind), if you compare that hiſtory with this; you will obſerve that both the men died almoſt within

(*c*) S. cit. §. 17.
(*d*) De Larynge Fig. 9.
(*e*) Theatr. Anat. l. 3. c. 44. & Tab. 33. Fig. 1.
(*f*) Anat. corp. hum. tr. 3. c. 11.
(*g*) Expoſ. Anat. tr. de la Teſte n. 433.
(*h*) S. cit. §. 20.
(*i*) Vid. Epiſt. 42. n. 41. & Epiſt. 44. n. 9. & Epiſt. 60. n. 12.
(*k*) Epiſt. 62. n. 13. (*l*) n. 12.

the

the ſame time, and both without convulſions, and the laſt even though he had been ſoon ſeiz'd with a fever: ſo that if you ſhould be willing to examine, and prove theſe events by thoſe dogmata of Hippocrates which I then produc'd; you may underſtand, even from hence, how few dictates of phyſicians are extant, which you may receive without any exception.

And you will even plainly perceive, from what I have written to you on former occaſions, that thoſe things which are ſaid of a fever ſolving an apoplexy, whereto it ſucceeds, cannot be true without many exceptions.

Yet I confeſs we are not here at liberty to make uſe of that exception, which is made mention of in the latter part of the eleventh letter (*m*); for the fever ſoon came on.

And in regard to another, which I have referr'd to in the ſecond letter (*n*), you will perhaps be doubtful here at firſt; as you will ſee, that in both of the aphonous patients, there was water in the brain: although in this laſt who was ſeiz'd by a fever, we are ſcarcely at liberty to ſuppoſe the apoplexy to have been of a ſerous kind: but, by reaſon of the little cavern, hollow'd out by blood, we are rather under a neceſſity of ſuppoſing it to have been of a ſanguineous nature.

15. But as, when I treated of aphonia before, I ſpoke not only of that which is fatal, and from drunkenneſs, but alſo of another far unlike this, relating a certain cure of mine; I now alſo think it will not be improper to give the hiſtory of two other caſes, of virgins who were ſpeechleſs; which I ſhall do in a very few words.

I was conſulted for both of them, and gave an anſwer in writing. And indeed both of the young women were cur'd, the one perhaps by me, the other certainly rather by accident. For being carried into the country at the time of the vintage, it there happen'd, while ſhe was taſting a grape, that ſome part of it falling down into the larynx, excited a violent cough, after which ſhe could immediately ſpeak; but not for a very long time; nor was this to be wonder'd at, in one who, during ſo long a courſe of the diſorder, had ſometimes been free therefrom; but had fallen back into the ſame incapacity of ſpeaking afterwards.

And the ſame thing had likewiſe happen'd to that other virgin, before her noble parents aſk'd my advice for her. But I was inform'd that ſhe, after the uſe of remedies, had recover'd her voice again; and have never yet heard that ſhe loſt it any more.

But for what length of time the cough cur'd this diſorder; by what means it cur'd it; whether by diſcuſſing any matter, which, however, did not fall under the notice of the ſenſes; or by exciting the inert muſcles of the larynx; or by bringing about any other change of this kind in the nerves; it would perhaps be very uſeful to phyſicians to know: and this that, in a ſimilar caſe, they may, with the more confidence, try what advantage could be obtain'd by the aſſiſtance of a cough; although this ſhould be excited in a moderate degree only.

16. But now let us go on to another diſorder of the larynx, or pharynx, or both of them; I mean the angina. When, in writing to you, I made

(*m*) n. 24. (*n*) n. 10.

mention

mention of this diſorder (*o*), I complain'd, and was at the ſame time ſurpriz'd, that no diſſections of perſons who died of this diſeaſe were extant.

For it did not ſeem that this could have happen'd, in a diſeaſe that is not only ſo dangerous, but alſo not uncommon; and a diſeaſe that even ſometimes ſpreads abroad epidemically, in the manner it did formerly; as Macrobius (*p*) has related from Julius Modeſtus; when ſacrifices were inſtituted to the goddeſs Angeronia, "becauſe the Roman people was freed from a "diſorder which is call'd *angina*, by the previous blowing of a ſouth "wind."

And in times nearer to our own, it has produc'd great and long-continu'd ſlaughter, by falling upon children for the moſt part. Yet although the laudable cuſtom of diſſecting human bodies was then much practis'd, and phyſicians no little vers'd in anatomy were preſent; as among the Sicilians Jo. Bapt. Corteſius, and amongſt the Neapolitans M. Aurelius Severinus, who not only viſited the patients, but wrote of this their diſeaſe (*q*); you will not find any diſſection relative thereto in their writings.

And indeed Corteſius was one of thoſe who perſuaded the ſenators of Meſſina, when they inſiſted upon having enquiries made into the diſorder by diſſection; or, at leaſt, one of thoſe who thought the perſuaſion to be juſt; "that the diſſection of carcaſſes was, altogether, of no uſe, in regard to the "knowledge of that diſeaſe;" as he judg'd it to conſiſt in the inflammation and gangrene of parts, which could very well be ſeen upon opening the mouth; and particularly of the tonſils.

Severinus alſo, ſuppoſing it to be ſufficiently known by the ſymptoms, was not willing "to take upon him the tedious labour of delineating the ſeat of "the diſorder, or the diſorder itſelf;" not even in words (*r*). He therefore, at laſt, ſent only one ſingle obſervation to the printer at Francfort, which could not be inſerted in the book that was already copied out in proper form for the preſs; for which reaſon it was publiſh'd in the latter part of the volume, among other things which were alſo to be added to the foregoing books.

This obſervation you have, indeed, in the Sepulchretum (*s*), where I alſo had read it; but ſo negligently copied, that amongſt other words which have a tendency, in general, to confirm the hypotheſis of Severinus, theſe very few things, which alone related to the title *De Angina*, are omitted: "The "larynx, being ſtrictly examin'd, was found to be cover'd with a kind of "pituitous cruſt on the external ſurface, without the appearance of an "ulcer."

And this was the only obſervation which I could find, from the time of having written to you, of the larynx of a perſon who died of an angina, being examin'd by diſſection; though I made no doubt, but if Severinus had choſen to make theſe enquiries, not once only, but frequently; as he

(*o*) Epiſt. 14. n. 39.
(*p*) Saturnal. l. 1. c. 10.
(*q*) Miſcel. Med. Dec. 9. Epiſt. 6. De Recond. Abſceſſ. Nat. l. 8. ſive Diatriba de Pedanch.
(*r*) Part. 1 in fin.
(*s*) L. 1. S. 23. Obſ. 4.

certainly

certainly had ſufficient opportunity of doing, ſince that angina had, from his own teſtimony (*t*), kill'd " many thouſands of children ;" I made no doubt, I ſay, but other appearances would likewiſe have occurr'd in other bodies.

Wherefore, as I could not find any other obſervations upon the angina that were ſaid to be made upon human bodies, beſides this one of Severinus; I enquir'd whether any were extant from beaſts at leaſt : and yet I could only find that theſe appearances had been ſeen, in dogs which died of an angina, by Stegmannus (*u*) ; that is to ſay, " The necks were externally tumified : " the internal ſurface of the fauces, and the muſcles of the throat, were in- " flam'd."

But if the ſeat of this diſeaſe, as well as that of others, were enquir'd into more frequently, and deſcrib'd ; do you think there would have been any-one in our age, who ſhould aſſert, without producing any enquiry of this kind, that the thyroid gland " is the very ſole and only part, which " conſtitutes the ſeat of the angina, when in its moſt violent degree."

17. But ſince the time I made that obſervation, which I afterwards ſent to you (*), upon the fauces, larynx, and aſpera arteria of a young man who had been carried off by an angina ; I know that others have come forth, which were made in the ſame year, eſpecially upon children, who, as we have ſaid was the caſe formerly in the kingdom of Naples, and Sicily, were then carried off in France by the moſt violent angina.

The phyſicians there were not ſatisfied, either with the ſigns of the diſeaſe, or with the inſpection of thoſe parts only, which come in view, when the mouths of the patients are open'd : nor was this without effect ; for upon diſſecting the bodies of children, they evidently found how great a diſorder might lie hid in the aſpera arteria, as you will learn from two diſſections, the accounts of which were ſent to the Royal Academy of Sciences, by that ingenious phyſician of Orleans, Arnault, and publiſh'd by this Academy (*x*).

But even ſome of our countrymen, of approv'd diligence and veracity, have not been wanting to themſelves in this reſpect ; as I have learn'd from a hiſtory, which, being written by one of them, has come into my hands. The ſummary of it was, that, in a man who had been kill'd by an angina, the larynx was found to be inflam'd ; and that the upper part of the pharynx, together with the palatum mobile, and tonſils, was found to be corrupted, and quite black with a gangrene and ſphacelus.

18. You perceive that I here ſpeak of the true, that is the inflammatory, angina ; juſt as I did in the fourteenth letter (*y*). But in regard to the ſpurious, which I now ſee is call'd the watery angina by eminent phyſicians ; by whom the other ſpecies of angina, and amongſt theſe the convulſive, are taken notice of ; if you wiſh to know what I have ſeen by means of diſſection relative thereto ; take what follows. That in regard to the ſpurious angina I diſſected one or two, whom I have deſcrib'd to you in the ſame

(*t*) De efficac. Med. l. 1. p. 2. ubi de Phlebot. c. 16.

(*u*) Eph. N. C. Dec. 3. A. 5, & 6. Obſ. 169.

(*) Epiſt. 44. n. 3.

(*x*) Memoir. A. 1748.

(*y*) N. 39.

letter (z), and who died with this diſorder, if you pleaſe, but certainly not of it. And to the convulſive ſpecies I cannot refer that which rather approach'd to the nature of the *Paralytodea*, as ſome call it, in that woman whoſe hiſtory I ſhall immediately ſubjoin.

19. An old woman; who had lain a long time in the hoſpital, and was become ſo emaciated as to ſeem to be nothing but ſkin and bone; having a fever at length come on; or, at leaſt, made more evident; and ſhe not being able to ſwallow, nor yet to open her mouth, ſo as to give room to examine the internal parts ſufficiently, was ſuppos'd to die of an angina, about the end of the year 1755.

Upon diſſecting the head in the hoſpital, we found the internal maxillary glands to be large, and eſpecially the right; ſo that it might, perhaps, have prevented the depreſſion of the jaw, ſo much as was neceſſary to the opening of the mouth to any conſiderable degree: and in ſome meaſure might even have been injurious to deglutition: yet not ſo as entirely to prevent it. But the larynx was ſound: and the aſpera arteria, and the fauces, together with the palatum mobile, were found to be in a ſound ſtate; as the tonſils and root of the tongue were alſo: nor did that enlargement of the maxillary glands ſeem to be recent.

The thorax had a ſmall part of one of the lobes of the lungs in a ſtate of hardneſs; and not without ſome purulency. Then the ſpine, alſo, was obſerv'd to be ſomewhat deviating from its natural courſe; though but ſlightly. Yet this inclination had, probably, been the cauſe of the woman's carrying her head in ſuch a manner, that, of the two round ligaments whereby the dentoid proceſs of the ſecond vertebra is connected to the edge of the great foramen of the ſkull, I found the right to be longer and thicker than the left.

20. And Mead (*a*), indeed, had not found "even the very leaſt mark of "inflammation, in the glands, or the muſcles," of the fauces; when he diſſected them, in the body of a man who had been carried off by a convulſive angina: but all the veſſels were turgid with very thick blood, and every-where prominent. Nay, and he goes ſo far, as to make mention of a convulſion of all the nerves in this angina; and calls the diſorder, in expreſs words, "a ſtrangulation of the fauces."

But as there was no ſenſation of this kind, nor the other appearances that were juſt now ſpoken of, in the old woman in queſtion; and as there were ſome other of thoſe ſigns, which Boerhaave (*b*) takes notice of, in an angina "that has the nerves and muſcles paralytic;" as, for inſtance, not only that "it appears without any mark of external or internal tumour," but alſo "in the end of long diſeaſes," when the body is "very greatly" exhauſted of its juices: "and that it is then almoſt always the ſign of death "being at hand, and after death ſhews the lungs to have been ſuppurated;" I ſhould therefore believe that this angina is not to be referr'd to a convulſive, but rather to a paralytic affection, if we muſt refer it to one or the other ſpecies of diſeaſe.

(z) N. 24. & ſeqq.
(*a*) Monit. Med. c. 4.
(*b*) Aphor. de cogn. & curan. morb. § 784. & ſeqq.

21. Thus

21. Thus far I had written, when turning over the volume of the *Acta Eruditorum* (*c*), lately imported here from Leipſic, I learn'd ſome things from books that we have not in this country, relative to one, and to another ſpecies of diſeaſe, which we have treated of in this letter; I mean, the angina, and blindneſs.

To the former relates the hiſtorical diſſertation (*d*), written in French, upon the gangrenous angina of children; the ſame, I ſuppoſe, that we have been ſpeaking of above (*e*); and to blindneſs the obſervation of that celebrated man Philip Adolphus Boehmerus (*f*), upon a woman, who, having been ſeiz'd with an obſcurity of viſion, after obſtinate diſorders of the head, and at length with a loſs of ſight, had, in her body after death, beſides other appearances; and particularly a quantity of ſerum, in part fœtid, wherewith the three firſt ventricles of the brain (for the pituitary gland was ſchirrhous and ulcerated) were diſtended; had, I ſay, beſides theſe appearances, a fungous excreſcence lying upon the conjunction of the optic nerves.

And you will, at the ſame time, find other obſervations in this book, that relate to different diſorders; ſo that I do not doubt, but it will be very agreeable to you, that I have referr'd you thereto. Farewel.

LETTER the SIXTY-FOURTH

Relates to Diſorders of the Thorax.

1. IN proportion as the interval of time betwixt ſending you my firſt letter, on the diſorders of the head, and the preſent year is greater; and in proportion as there are more parts in the head than in the thorax; ſo many the fewer obſervations had I the opportunity of making upon the diſorders of this laſt-mention'd cavity: ſo that I can eaſily comprize them all in this one letter; wherein I ſhall, in the firſt place, declare what appearances I have ſeen in the lungs, and after that in the heart, and its large veſſels.

2. A woman, of a middle age, had died in the hoſpital of an inflammation of the lungs, about the end of January, in the year 1755; at which time I was teaching anatomy in the college. And that I might go on to do this the more fully; there were carried thither from her body alſo (for I had the ſame ſupplies from ſeveral other bodies), together with thoſe parts with

(*c*) A. 1758.
(*d*) Vid. M. Jul.
(*e*) n. 18.
(*f*) Vid. M. Januar.

which women are furniſh'd for the ſake of generation, and the ſecretion of urine; the viſcera of the thorax itſelf, ſuch as they were, together with the diaphragm.

In examining thoſe parts of the belly, I found ſome things which only deviated from the general rule of nature: and others which were entirely preternatural.

In the number of the firſt was a roundiſh body, of the diameter of a full inch; of a reddiſh colour, and ſurrounded with its coat; which, although it was in the adipoſe membrane of the left kidney, yet was certainly neither the ren ſuccenturiatus, which was double on that ſide, nor another very ſmall kidney, nor a lymphatic gland; but rather another very ſmall ſpleen, as the nature of it, when cut into, demonſtrated.

For in the circumference, as I have often obſerv'd in the ſpleen, it was of a bright red colour; and, in other reſpects, of a red colour degenerating into brown: ſo that, although the ſtructure gave ſomewhat more reſiſtance to the knife than the ſpleen gives, every one, who ſaw it, readily allow'd it to be a ſpleen.

The ſame left kidney was longer than the right: nor was this to be wonder'd at; as it was furniſh'd with a double pelvis, one at the upper part, and another at the lower part; being quite diſtinct from each other, as the ureters were alſo: for theſe canals coming out, one from each pelvis, open'd at the uſual part of the bladder, by an orifice (an appearance which it had never happen'd to that very experienc'd anatomiſt Euſtachius (*a*) to ſee; but which I have happen'd to ſee three times at leaſt (*b*)); by an orifice, I ſay, proper to each; the one being at a little diſtance below the other.

But whether that which I obſerv'd in the uterus related to diſeaſe, or only to the time of the menſtrua being at hand, was a matter of doubt. For the upper part of the fundus was internally red; but, although the ſanguiferous veſſels were ſeen through the internal membrane; by preſſing the fingers underneath, no blood was diſcharg'd nevertheleſs, as is frequently the caſe at other times.

Yet, certainly, thoſe appearances which I ſaw in the trunk of the great artery, and its iliac branches, were to be referr'd to diſeaſe. That is to ſay, in the former were white ſpots internally, the beginnings of future oſſifications; and in thoſe branches, and on their internal ſurface likewiſe, parallel lines drawn in a longitudinal direction were prominent: and theſe lines could not be obliterated by any means; not even by drawing both ſides in oppoſite directions.

The thorax alſo exhibited diſeas'd appearances; and ſtill more than the fore-mention'd parts: yet there were ſome which are rather unuſual than preternatural. For the diaphragm tranſmitted the venous blood, that came up from the belly, not through one foramen, but through two foramina (which I alſo found very lately in the year 1759, and publicly demonſtrated, in the body of a man); I ſay, through two foramina very near to each other; in the ſame manner, for inſtance, that I formerly told you of by three.

(*a*) De Renib. c. 19. (*b*) Vid. Epiſt. 7. n. 17. & Epiſt. 54. n. 33.

But

Yet in the heart, the orifice of the coronary vein was not furniſh'd with a membranous valve; but ſo cover'd with ſlender and frequent parallel filaments, going down from the upper part to the lower; as well on the right ſide, as on the left; in ſuch a manner, that the blood could nevertheleſs paſs through betwixt filament and filament; and ſtill more through the middle of the orifice, where the filaments were entirely wanting.

But as to the morbid ſtate of the blood, hereto related the white polypous concretions, which were drawn out from the large veſſels of the heart; and to the morbid conſtitution of the ſolid parts, related not only thoſe tubercles, whereby the border of the valvulæ mitrales was become thicken'd; as I have ſeen at other times, and that not unfrequently; but particularly that which brought on the cauſe of death; I mean, a great part of one lobe of the lungs being ſwollen, hard, heavy, and denſe internally, and of a firm ſubſtance; which was not only of a colour dilutely red, like that of liver after being boil'd; ſuch as I have very frequently ſeen in inflammations of the lungs; but alſo of a colour ſomewhat white, from purulent matter being mix'd with it, as it was natural to conjecture: and this purulency was concreted by the froſt, which was very powerful and ſevere in that ſeaſon.

On the back part of the aſpera arteria, the cellular membrane was ſo diſtended by the fluid detain'd therein, that the glands, which I formerly delineated there (*c*), ſcarcely or not at all appear'd.

3. I have not made this one diſſection only, that related to diſorders of the thorax, ſince the time I ſent ſuch a great number in the twenty-firſt letter. For you have receiv'd the deſcriptions of others after that in other letters (*d*); particularly the laſt; which you will join with thoſe, propos'd in that letter and in the twentieth, wherein the pleura was not free from inflammation; although the patients had been free from a ſenſe of pungent pain.

And, although I have not omitted to conjecture, by what means it had happen'd thus, when I gave you theſe obſervations; yet as very experienc'd men now teach us that the pleura is devoid of ſenſation, by the original inſtitution of nature; which certainly no one could have prov'd at that time; I ſhall not be diſpleas'd, if, when that controverſy ſhall be at length accommodated to their opinion, you prefer their dogma to my conjectures; and, by this means, much more eaſily explain, not only thoſe, but other obſervations ſimilar thereto; among which is the obſervation made by that celebrated man Ignatius Vari (*e*), and that which the ſame author has referr'd to, as formerly made by Petrus Criſpus.

Certainly each of them, in whatever manner you may chooſe to explain them, is well worthy to be transferr'd into the Sepulchretum.

However, in regard to what relates to pains of the cheſt and ſides, there are others; and theſe of more than one kind; which deſerve your conſideration; and in particular that, which, from an acute pain near the left ſide of the ſternum, join'd with the ſigns of a peripneumony, ſeem'd to relate to an inflammation of the anterior part of the left lobe of the lungs; whereas, after the death of the patient, which was then unexpected, the celebrated

(*c*) Adv. I. Tab. 2. Fig. 1.
(*d*) Epiſt. 36. n. 23. & Epiſt. 75. n. 16.
(*e*) apud P. Toſetti ſull' Inſenſib. &c. Lett. 4. n. 24.

Lieutaud

Lieutaud (*f*) found, that it had, in fact, related to an inflammation and ſuppuration of the membrane that inveſts the pericardium internally, and the heart externally.

Yet this obſervation, which well deſerves your reading, on account of the very remarkable ſeat of the diſorder; and which you ought to compare with others of the ſame kind, that I ſhall tell you where to find below (*g*); belong'd to the claſs of inflammations nevertheleſs.

But there are others which belong to quite another claſs of diſeaſes; as, for inſtance, that which you will read from the relation of John Larber, formerly my auditor, but now a learned and very experienc'd phyſician. For this author; in the annotations which he has interſpers'd in his edition of Palfin (*b*); relates of a young man; whom he ſaw labouring under a cough of long ſtanding, a ſpitting of blood, and a recurrent pain of the right ſide; that he was freed from theſe complaints by having cough'd up a piece of ſtony matter, ſimilar to white coral.

And, in the ſame place, he takes notice of the lungs of a man; who had labour'd, for a long time, under the *morbus niger* of Hippocrates, and had died in the laſt ſtage of a maraſmus; being flaccid: and in many parts of them he found hard little bodies, of the bigneſs of peas, and of a globular form.

Which things, as he has added them to that obſervation of his author, wherein he relates that a ſtone was found by him, in the lungs of a ſoldier; not leſs than a pigeon's egg, and not unlike an egg in figure; I here take notice of alſo, that you may add theſe three obſervations to the former; and may compare them with ſome of thoſe which I have collected for you in great number in the fifteenth letter (*i*), when I diſcours'd upon calculi of the lungs, and their effects.

4. But to thoſe things that I have produc'd in the nineteenth letter (*k*); which were not a few, and of various kinds; in regard to the long-agitated controverſy, whether water be in the lungs and ſtomach of drown'd perſons, or not, ſome diſſections which I read not long ago relate. For that very accurate anatomiſt Meckel; in deſcribing the fifth (*l*) of his obſervations upon the diſorders of the heart, made upon a ſoldier, who had thrown himſelf into the river; ſays, that the lungs were entirely full of air and blood: that is to ſay, full of the latter within the veſſels; which he found to be very tumid, with fluid blood, in the other viſcera alſo, as in other drown'd perſons: but if he had ſeen the ſtomach to be ſwollen with water, it does not ſeem that he would have omitted to mention the circumſtance.

Another diſſection is that of an epileptic patient, who, having thrown himſelf into the cold bath, was ſoon after found ſuffocated therein. But in none of this man's viſcera, was any water found by the celebrated Weſzpremus (*m*); who, when the aſpera arteria was perforated, heard "the air,

(*f*) Mem. de l'Acad. R. des Sc. A. 1752. I. Mem.
(*g*) N. 14.
(*b*) Anat. Chirurg. Tom. 3. P. 6. c. 9.
(*i*) N. 19. & ſeqq.
(*k*) N. 40. & ſeqq.
(*l*) Sect. 1. Vid. Hiſt. de l'Acad. R. des Sc. de Berlin, A. 1755.
(*m*) Obſ. Med. 8. § 2.

" which was then contain'd in the lungs, ruſh out with a kind of whiſtling " noiſe:" for which reaſon he thinks that it is not water, but air, which, being before " accumulated by repeated inſpiration, and diſtending the ve- " ſiculæ pulmonales," prevents the tranſit of the blood through the lungs; and conſequently the circulation thereof through the whole body; and by this means kills thoſe who are immers'd in water, " and perhaps ſtrangulated " perſons."

And as to what relates to ſtrangled bodies, you may remember, what I ſuſpected in that very ſame letter (*n*), of the air being retain'd in their lungs, and dilating itſelf.

However, in regard to drown'd perſons; being mindful of thoſe things that others, and I myſelf, have ſeen by experience; I am the more in doubt, in proportion as I read the more attentively, another obſervation (*o*) which the ſame celebrated man has immediately ſubjoin'd to the former.

For when he endeavour'd to recal to life a certain ſailor, who had been drown'd in the river Thames, and was not found, and taken out, till " after " a quarter of an hour and half a quarter;" and had then no ſigns of life remaining in him; he did not immediately perforate the aſpera arteria, but, at length, perforated it after conſuming " a whole hour " in the uſe of other remedies: nor did he obſerve any ſign of air burſting forth, as he ſays; and even, introducing a pipe through that foramen, forc'd in the air " at repeated " times, ſo that, the veſicles of the lungs being inflated," and other remedies being made uſe of, (all which you will read were not without effect) he might puſh on the circulation of the ſtagnating blood; which he at length happily brought about.

Nor indeed within the time of that cure, which exceeded two hours; that is to ſay, till " the dead ſailor," as he at firſt ſeem'd to be, " was recall'd to " life;" is any-thing ſaid to have been thrown out of his mouth: ſo that we cannot reconcile this with our obſervations, and thoſe of others; and in particular thoſe of the very ingenious Haller, whoſe diſſections; though not ſo much that which was made on a woman, who had been immers'd many hours, as on a cat, and dogs, which were immers'd for a very ſhort time; it will be ſufficient to have referr'd to here in a word, not only becauſe you may ſee them taken notice of in that letter of mine (*p*), but becauſe you may ſee them propos'd afreſh by him very lately (*q*); and, at the ſame time, learn, that he hitherto expreſsly aſſerts (*r*); of the viſcid ſpume, which ariſes from water agitated with air, in the lungs of drown'd perſons, and is found therein; that it can " be forc'd out, and ejected from thence, by no art yet known to " us;" and that, as long as it ſtagnates there, it prevents the neceſſary paſſage of the blood, from the right ventricle of the heart to the left.

And this he the more convictedly aſſerts, after having tried that even the moſt violent ſhock of electricity is not ſufficient for this purpoſe.

Yet he himſelf alſo confeſſes, that there is the higheſt difficulty in conciliating his obſervations with the number of oppoſite ones, wherein art has

(*n*) N. 38.
(*o*) Sub n. 9.
(*p*) N. 45.
(*q*) Mem. ſur pluſieurs phenom. de la reſpir. S. 4.
(*r*) Ut antea opuſc. pathol. Obſ. 62.

excited

excited the perſons to life; ſo as to make the mind of the conciliator, not to mention others, acquieſce therein: and ſome obſervations of this kind he, contrary to what you would have expected, produces, in his Elements of the Phyſiology of the Human Body (*s*), which he has lately publiſh'd, among the arguments for a matter which he there treats upon.

But as, among the experiments which relate to that controverſy, he has added ſome things which relate to another; that is to ſay, whether it be rightly argued from the lungs of a fœtus ſwimming in water, that it was born alive, or not; I would have you attend to theſe things alſo, and thoſe that he deduces therefrom.

For you will find ſomething to add to what I have written to you, upon the cautious uſe of that medico-legal experiment, in the ſame nineteenth letter (*t*); either when I conſider'd a fœtus, whoſe carcaſe has been attack'd by putrefaction; or when I had one in my eye who has drawn in the air as it is coming out from the belly of its mother, and died in the very birth; or, finally, whether one into whoſe mouth the air has been impell'd: for you will obſerve, that out of ſo many inflated lungs of fœtuſſes, the air could not be preſs'd out from any, except in one lamb only, to ſuch a degree, as to prevent the lungs from ſwimming any more in water.

The remainder of this queſtion, and any thing elſe that relates to the lungs, we at preſent omit. For now we muſt paſs on to other things, whereof much is to be written; that is, to the diſorders of the heart and its large veſſels; beginning with the pulſe, and with that very rare pulſe, in regard to which; as I have already ſaid, when I hinted at its having been obſerv'd by me in an old man (*u*), it might happen that I ſhould ſometime or other give the full hiſtory of it to you; I now ſend you the whole relation, as I gave you reaſon to expect.

5. This man was a merchant, at Padua, of ſixty-four years of age, of a ſquare ſtature, and of a fat habit of body; but not to exceſs. He, having been formerly ſubject to a rheumatiſm, and contractions of the nerves, had been cur'd by medical remedies: ſo that notwithſtanding he was taken up with many and various buſineſſes continually, he was, nevertheleſs, in good health, to that very age which I juſt now ſpoke of; when, of a ſudden, ſome circumſtances happen'd, from whence he was ſeiz'd with very violent affections of the mind, with terror, fear, anger, and ſadneſs.

A few days after theſe commotions, a kind of vertigo coming on, he fell down. And, on the day following, he began to be troubled with convulſive motions, together with an attack ſimilar to an epilepſy.

This attack was ſhort, but frequent, and was ſolv'd by the breaking forth of fœtid eructations; a redneſs of the face ſometimes coming on, and ſometimes a paleneſs: but it was violent, by reaſon of the ſenſe of narrowneſs and conſtriction of the fauces, which attended it continually; and by reaſon of the ſame conſtriction of the ſtomach alſo.

The pulſe was, at that time, ſtrong indeed, but hard and rare: and the inteſtines and bladder excreted only a very ſmall quantity.

(*s*) Tom. 1. l. 4. S. 5. §. 11. (*t*) n. 45. & ſeqq. (*u*) Epiſt. 24. n. 33.

As venæſections had been repeatedly made uſe of, from the very beginning, to no purpoſe, the diſeaſe ſeem'd, to the phyſicians, to depend upon the ſtomach; eſpecially as the patient was previouſly ſenſible that the fit was coming on, from the ſenſe of a kind of ſmoke, as it were, riſing up from the hypochondria.

Therefore, beſides the more mild remedies againſt an epilepſy, they took care to cleanſe the ſtomach, from time to time, by means of gentle eccoprotics; and to cleanſe the inteſtines every day by the help of glyſters.

But if any thing mitigated the violence of the diſorder, it was the oil of almonds freſh drawn; which they made uſe of from time to time.

However, although the patient was, perhaps, never better, to appearance, than on the twenty-ſeventh day from the beginning of the diſeaſe; the attacks, which had been abſent for ſome days, return'd ſo vehemently on this very day, that, beſides the other circumſtances which I have mention'd, he began to be averſe to any kind of food whatever from that time: he alſo began to throw up, now and then, by vomitings, whatever he had taken in, to be troubled with a ſingultus, and to have a kind of fœtid halitus; and although there had never been any difficulty of reſpiration, to ſpit up blood and putrid matter frequently.

To theſe ſymptoms were added ſweats, at the time of the extreme parts being cold, and every now-and-then a delirium.

And in this manner; the ſymptoms ſometimes being more violent, and ſometimes more mild; he went on to the thirty-fourth day of the diſeaſe: and on that day, after having diſcharg'd by ſtool, bloody, grumous, and putrid matter, of the weight of almoſt three ounces; all the ſymptoms grew milder in a ſurprizing manner: nor did the pulſe only, laying aſide its rareneſs and hardneſs, return to its natural ſtate ſoon after; but his former health was perfectly reſtor'd.

This ſtate of health laſted about four months, till, after a ſhort walk, and going up of ſtairs, thoſe former convulſive attacks began again to come on; notwithſtanding they were leſs frequent and ſhorter; and to bring back a rareneſs of the pulſe.

It was then the month of December. From which time, to the very beginning of June, the diſeaſe ſtill continuing, and not yielding to remedies; I was then ſent for to conſult with the other phyſicians, and heard that relation of the caſe which I have now given you; and found the patient to be ſuch a one as you may learn from the letter I have mention'd.

That rareneſs of the pulſe in particular, was found by me to be ſo great, that the number of pulſations was leſs, by about two third parts, than it ought to be: and I had the ſame account from the other phyſicians, in regard to what they had before obſerv'd in the courſe of the diſeaſe.

And this rareneſs, which was perpetual, and had been ſo for many months, was perceiv'd to be even much more conſiderable, as often as ever the attacks were at hand; ſo that the phyſicians were never deceiv'd, if, from the increaſe of the rareneſs, they foretold a paroxyſm to be coming on: during the time of which the pulſe not only became frequent, when compar'd with its former ſtate, but ſo frequent, that it would have been call'd ſo in any patient.

When I had heard theſe things, and had conſider'd all the other circumſtances; I anſwer'd, that the diſorder ſeem'd, to me, to be complicated, and therefore to be ſuch a one as could not be diſtinguiſh'd, in every reſpect, without danger of an error.

For this reaſon, I ſaid that nothing ſhould be attempted raſhly; but that we muſt make uſe of thoſe harmleſs remedies which had been wont to bring ſome relief.

However, as the diſorder, which had preceded ſome time before, the cauſe, beginning, and moſt of the ſymptoms of the preſent diſorder, ſhow'd that the nerves were affected, or at leaſt drawn into conſent; I ſaid, that in order to mitigate, at leaſt, the convulſive irritations of the nerves, a ſmall quantity of opium might be tried; and if it ſhould happen to be of any ſervice; as it had been of much advantage in that fellow-citizen of mine (*x*), who labour'd under almoſt ſimilar affections; that the cautious and well-tim'd uſe of it muſt not be neglected.

And indeed the celebrated Jacob Placentini, with whom I had had this conſultation, related to me afterwards, that it had been tried by him; and not without ſome utility to the patient.

But the diſorder continu'd that ſummer nevertheleſs. At the end of which; the difficulty of reſpiration being encreas'd, together with the cough, and the expectorated matter being ting'd with a leaden colour; the attacks were alſo made more frequent, longer, and more violent; and the ſenſes, which were perfect betwixt the paroxyſms, as well as the memory, ſeem'd to be quite gone when they were preſent.

Yet I learn'd, from thoſe who had ſeen him on the twentieth day before death, that his pulſe was ſtrong nevertheleſs, but ſtill rare. And his death happen'd, at length, on the laſt day but one of September, in the ſame year 1747; on which day three or four attacks had preceded.

As the patient always had it in his power to lie on his back, or upon either of his ſides, ſo, in lying upon his left ſide, he died like a ſuffocated perſon; his tongue being thruſt out, and the veſſels of his face being tumid quite to blackneſs. From the firſt beginning of the diſeaſe to the very laſt period, that is, for fifteen months, no fever ever appear'd, nor any pain of the head was troubleſome.

On the day following I was preſent at the diſſection of the body, according to deſire.

The right cavity of the thorax contain'd many pints of water reſembling urine; and the left cavity contain'd a conſiderable quantity too, but ſomewhat leſs than the other. The lungs; which no-where adher'd to the pleura, were no-where hard, but of a cineritious colour here and there, throughout the anterior ſurface; when cut into, did not ſhow the leaſt diſorder in any part: except that it was obſerv'd, in cutting into the ſuperior lobe, on the left ſide, that, in many places, a white fluid, and puriform, rather than a purulent, matter was diſcharg'd; I ſuppoſe from the bronchia, which were cut into.

(*x*) Epiſt. 9. n. 6. 7.

In opening the aſpera arteria alſo longitudinally; together with one of the larger bronchia; not the leaſt mark of diſorder could be ſeen on the internal ſurface of that artery, beſides a colour degenerating from redneſs into brown. Within the pericardium was a ſmall quantity of water of the ſame kind with that in the thorax.

But the heart was very large, by reaſon of the ventricles being dilated; and not from the parietes being become thicker: yet the columnæ were enlarg'd; as I particularly remark'd in the right ventricle. The auricles in like manner, and all the valves, were enlarg'd; but found nevertheleſs; the orifices of the coronary arteries alſo, were unuſually dilated.

The great artery, likewiſe, was wider than is natural, quite to the beginning of the curvature. On the internal ſurface of that artery, a little above the valves, I obſerv'd a few protuberances as it were; and the ſubſtance of the artery was there pretty thick, hard, and more white than uſual. I alſo ſaw one of thoſe protuberances where the ſame artery deſcended in the courſe of the thoracic vertebræ; for quite to that part did I order it to be open'd.

But the pulmonary artery, and the lower part of the veins of the ſame name, and both the venæ cavæ, near to the heart, were internally and externally in a natural ſtate. I ſaw a great quantity of black and fluid blood, without any, even the moſt ſlight, polypous concretion, in both the venæ cavæ; but ſtill more in the right auricle, and in both the ventricles.

The belly being open'd, the inteſtines were found to be turgid with air in ſome meaſure; the ſmall inteſtines covering the omentum; which was drawn up to the ſtomach. The liver was ſomewhat hard, and inclin'd to a blue colour. The ſpleen was ſomewhat larger than when in a natural ſtate.

The ſtomach was alſo large: and the internal ſurface of it was of a red colour degenerating into brown; being of a black colour in ſome places: and this, as I ſuppoſe, from blood ſtagnating there very lately; for the ſmall inteſtines, alſo, were of a reddiſh colour externally.

Yet theſe, and the colon; when examin'd with the hand, and turn'd about to one ſide and to the other; had not the leaſt mark of diſeaſe that any of us could obſerve. Neither was there any hardneſs or diſorder of any kind in the pancreas, or meſentery, in like manner.

And, finally, we muſt not omit this circumſtance; that, when firſt the inteſtines were mov'd to one ſide with the hand, a quantity of water, by no means inconſiderable, appear'd under them.

As to the diſſection of the cranium, neither the place, nor the time, permitted us to attempt this enquiry.

6. From this full, as I promis'd you, and even prolix hiſtory; deſignedly omitting thoſe circumſtances which were the evident effects of the diſeaſe, and which would require a diſcourſe longer than the hiſtory itſelf; I ſhall return only to thoſe things which I ſaid to the very celebrated Placentini, and that very ſkilful public *Proſector* Mediavia; and to others who were preſent; immediately after the diſſection of the body; I mean, that we had indeed ſeen a dilatation of the whole heart, and of the great artery: but that this certainly had not exiſted before the man's mind was ſtruck and agitated by thoſe very violent paſſions; for he was then in very good health: it there-

fore ſeem'd, that the beginning of this dilatation was to be accounted for, from the very diſturb'd motion of the ſpirits through the nerves; and in particular thoſe which go to the heart and to that artery: and from the ſame nerves being now and then irritated, as they go to the ſtomach likewiſe, both that ſenſe of a ſmoke, as it were, riſing up from thence, and thoſe convulſive paroxyſms which follow'd that ſenſe, were to be deduc'd; and that the firſt, and not very conſiderable, ſlowneſs of the pulſe was, without doubt, to be aſcrib'd to a certain diſorder of the ſpirits and nerves, which, however, was not yet encreas'd and confirm'd.

And if all theſe ſymptoms were firſt appeas'd by that bloody diſcharge from the inteſtines; the cauſe may perhaps be conjectur'd without difficulty, by thoſe who account for this diſcharge from the hæmorrhoids, and are not ignorant of all the roots of the vena portarum; eſpecially thoſe that come from the ſtomach, and at length, open in common, into the trunk of that vein.

Yet we are not therefore to deny, that this dilatation of the heart and great artery; eſpecially after it had been encreas'd; had contributed any thing to the rareneſs of the pulſe; as both of theſe parts were, by this means, leſs apt to contract themſelves than is neceſſary: and particularly as the nerves ſuffer'd diſtraction by reaſon of the dilatation.

However, that ſo great a rareneſs of the pulſe is not ſolely, nor chiefly, to be attributed to cauſes of that kind, it would be eaſy to conceive from hence; that in ſo many other perſons, in whom we found aneuriſms of the heart, and great artery, ſtill much larger than thoſe, there were not pulſes of this kind: ſo that, unleſs ſome other cauſe be added, it is very certain that ſuch a ſymptom is not brought on.

And it is very difficult to conjecture, what kind of additional cauſe this can be, unleſs we ſuppoſe it to be a certain diſorder of the ſpirits and nerves.

Thus far then I remember to have ſaid at that time: and I now chooſe to confirm theſe things, as far as it is in my power, by another obſervation which relates to the pulſe.

7. A ruſtic, who was already near eighty years of age, being admitted into the hoſpital; on account of a tertian intermittent fever; ſtaid there ſo long, on the ſcore of his poverty, after being cur'd, that, in the eighth month, he was ſeiz'd with a diarrhœa two or three times; and a ſlight fever coming on, he was gradually carried off thereby.

In this laſt month his urine was thick, and had a kind of milky and inodorous ſediment. There was no diſorder of the reſpiration, nor yet of the pulſe; except that, having been before ſoft, and, as you would expect, both from the diſorder, and from the age, of the patient, low and ſmall, it was ſo much diminiſh'd on the three laſt days of his life, that it could not be perceiv'd in any degree.

The carcaſe being brought into the college, where I was teaching anatomy; for the end of January, in the year 1754, was coming on; I obſerv'd the following things in the belly.

Within the lower part of the inteſtinum rectum the hæmorrhoidal veſſels were tumid. The other inteſtines were ſound; as the ſtomach, pancreas,

and ſpleen were alſo. In the meſentery indeed, there were ſome glands which were not ſmall, when conſider'd with reſpect to the age of the man; yet they were not morbid. The liver alſo was ſound; although contracted into itſelf, and ſmall: and the gall-bladder was very much diſtended with bile.

The kidnies, if you look'd upon the external ſurface of them, were not in a very good ſtate. But the bladder was perfectly ſound. In the mean while the ſcrotum; of which the man had never made any complaint in the hoſpital, though he had been there for ſo long a time; was obſerv'd not to be free from diſorder on either ſide.

For on the right ſide, within the tunica vaginalis; which was not more moiſt, than it naturally is; we found two calculi that were unconnected on all ſides; one being pretty large, the other very ſmall: but both of them hard. And the left tunica vaginalis, being much thicken'd, contain'd no calculus indeed; but a great quantity of water, which reſembled a lixivium in its colour.

That part alſo of the vas deferens, which was within the water, was much thicken'd likewiſe; as the albuginea which inveſted the epididymis alſo was: and the epididymis was here connected cloſely to the teſticle, by a larger tract than uſual. Nor was a roundiſh corpuſcle wanting near to the upper globe of the epididymis; being prominent from the albuginea, and of the ſame kind which, as I have ſaid in other letters to you (*y*), I have generally found in this ſpecies of the hydrocele.

In the thorax, the lungs were found to be in a ſound ſtate: and the ſurface of the heart was almoſt univerſally cover'd with a great quantity of hard fat. The ſinus of the pulmonary vein was of ſuch a ſize, that every one wonder'd at ſo great a dilatation; the fleſhy fibres being prominent upon its interior ſurface.

In all the valves of the great artery, we ſaw the corpuſculum Arantii chang'd into a ſmall indeed, but unequal, and in part bony, excreſcence: and on the internal ſurface of the ſame artery, in the whole of that tract, in which it deſcended from the extremity of the curvature, quite to the diaphragm, were bony ſcales in ſeveral places; though not large, and but thin: and from thence, quite down to the diviſion into the iliacs, and in the iliacs themſelves, were only the beginnings of thoſe ſcales; but theſe were very much crowded together, and render'd the internal ſurface unequal.

The head, as I made uſe of other bodies afterwards, I did not examine.

8. Therefore; to omit other things, and even thoſe excreſcences of the valves of the great artery; you very well ſee, that there was no peculiar diſorder in the pulſe even from ſo great a dilatation of the ſinus of the pulmonary vein; notwithſtanding it appears that the left ventricle of the heart, and conſequently the great artery which proceeds therefrom, could not have receiv'd a proper, and always equal, quantity of blood (as is naturally the caſe) from a ſinus ſo enlarg'd: nor could this ſinus, in like manner, admit

(*y*) XXI. n. 19. & XLIII. n. 16. & ſeqq.

it

it from the lungs; ſince, by reaſon of its dilatation, it was no more in a proper ſtate to conſtringe itſelf, ſo as to throw out alternately, ſuch a quantity of blood, as the law of nature preciſely requir'd; in order to make room for the new blood, that was about to come in from the lungs.

Yet there was no diſorder in the reſpiration: which, nevertheleſs, has been frequent in ſuch caſes; as I have ſhewn on a former occaſion (z). We may, therefore, learn from hence, that not even the uſual and frequent injuries do always and neceſſarily ſucceed to dilatations of the large veſſels; not to mention that moſt unfrequent rareneſs of the pulſe, on occaſion of which I thought proper to ſend you this hiſtory.

9. When I was writing to you of the inequality, and intermiſſion, of the pulſe (a); and enquiring whether diſorders of that kind could be accounted for from polypi, as many had done; you will remember, I think, that I paid ſo much regard to the doubts of that celebrated man Andrew Paſta, as to ſay, that until another experienc'd and learned man ſhould ariſe, and very clearly, and effectually, take away from me all thoſe doubts, I ſhould ſo long be doubtful with Paſta whether polypi were form'd before death; eſpecially any length of time; and yet that it was not very eaſy to remove from my breaſt theſe occaſions of doubting.

And I am ſo much the leſs diſpleas'd with myſelf, for having made theſe aſſertions, ſince I have lit on two writers, neither of whom I ſhould ſuppoſe to have known any thing of that epiſtle of Paſta, if they did not refer thereto. But, at leaſt, I do not think they have read it with attention.

For both of them make ſome objections, which had been, already, more than ſufficiently obviated by him. And one of them, moreover, thinks that all the reaſonings of Paſta are ſufficiently anſwer'd by one obſervation that he propoſes; as if it were really very difficult to explain that obſervation, without ſuppoſing the polypus to have been form'd long before death.

However, that polypus had, at leaſt, been in the number of the few, which I alſo thought ſhould be excepted. But it, nevertheleſs, does not belong to the ſpecies of the former; nor comes near to the nature of thoſe which cannot be explain'd without difficulty.

Yet, perhaps, that polypus, which was deſcrib'd to me in a letter, bearing date the ſixth of June, 1707, by that very eminent, and worthy friend of mine, John Anthony Stancari, who was, while living, profeſſor at Bologna; would have been difficult to account for.

The purport of his letter was, that, on this very day, had been ſhewn to him, by our friend Laurence Bonazoli, a ſegment of the vena cava of a woman, together with its emulgents; all which veins were much dilated: being furniſh'd with coats in great meaſure cartilaginous, and even in ſome meaſure bony; but full of a hard and polypous ſubſtance, ſo that they ſeem'd to be entirely ſtopp'd up: however, in examining one of them more attentively, a kind of ſinus was obſerv'd in that ſubſtance, through which the blood might, though with difficulty, be carried.

And he ſaid that it was aſſerted to him, by Bonazoli, that the iliac veins

(z) Epiſt. 24. n. 36. (a) Ibid. n. 30.

alſo,

alſo, the venæ pudendæ, and even the capillary veins, throughout the muſcles of the abdomen, were full of the ſame polypous and hard ſubſtance.

Yet as Bonazoli had open'd the belly of that woman haſtily; and for no other reaſon, but that he might take out thoſe parts which were neceſſarily to be taken out, in order to prepare the parts of generation for the demonſtration it was requiſite he ſhould make, in the manner it is generally made; he had, beſides thoſe ſmall capillary veins full of blood, but juſt obſerv'd a little ſerum effus'd betwixt the muſcles, which was of a ſanious nature, as it were; and in the cavity of the belly a very ſmall quantity of water.

But that, beginning his preparation very late, and when the carcaſe was already buried, he had then perceiv'd thoſe circumſtances which I have related of the cava, and of the other veins; ſo that he was much chagrin'd, he had neither open'd the thorax nor the head, and enquir'd into the ſtate of the veins in thoſe parts.

And as nothing elſe could be learn'd in regard to the body after death, ſo no information could be got of her while living; except that, in the hoſpital of St. Mary de Morte, where ſhe had died, ſhe had been taken for a dropſical woman; as ſhe was univerſally tumid, and every-where of a livid colour, ſuch as the ſkin is naturally of, where a great number of veins, turgid with blood, are lying beneath it: that ſhe had breath'd with the greateſt difficulty, and had always had a very low pulſe; which, at the ſame time, gave but little reſiſtance to the fingers of the phyſician who examin'd it.

This hiſtory I have not deſcrib'd to you with an intention to explain it, by reaſon of its being imperfect; but becauſe it, in part, comes near to that of the moſt excellent Haller, which I have endeavour'd to explain heretofore (*b*); and likewiſe, becauſe it is one of the moſt rare at leaſt, and that for more than one reaſon.

But let us go on, from thoſe things which I have written of polypi in the twenty-fourth letter, to thoſe that I have hinted at in the latter part of the ſame letter (*c*), upon the violent pulſations of all the arteries.

10. That theſe violent pulſations proceed not only from the abuſe of wine, but particularly from the irritation of the nerves, I did not merely conjecture then, but even promis'd that I would, at another time, confirm to you ſtill more, by the example of a certain merchant.

This man; who conſulted me more than once, even after that time; had been begotten by a father, who was ſo far affected with a hypochondriac, or rather a melancholic ſadneſs, that he ſought for the end of his troubles by ſwallowing a large quantity of opium; and who, although he was ſoon after ſorry for what he had done, and endeavour'd to throw it up by vomiting, yet found that his efforts were of no avail; and died by the force of the poiſon.

This accident ſtruck the mind of his ſon, who was then a young man, with great terror and ſurprize. After which he addicted himſelf too much to the uſe of wine, and venery. And theſe abuſes were ſucceeded by convulſive coughs, and a ſenſe of ſtupor in his hands; which were at the ſame time ſo affected, that he was not able to graſp and take up what he wiſh'd to lay hold of.

(*b*) Ibid. (*c*) N. 35. & ſeqq.

After

After theſe ſymptoms, at length, began violent pulſations of the heart and arteries, throughout the body: ſo that it was not to be doubted, but theſe pulſations alſo were brought on by means of the nerves; eſpecially as he was frequently oblig'd to bend his head and neck, and move his ſhoulders againſt his will: and, at the end of ſome months, when the arteries pulſated with leſs violence, he was oblig'd to do theſe things more frequently, and in a greater degree: he likewiſe became ſubject to palpitations of the muſcles; which I myſelf ſaw in the calves of the legs; and to very troubleſome contractions in the limbs, in the belly, and at the heart itſelf: and by theſe he was awak'd, even when he firſt dropp'd aſleep, and could ſleep no more.

But the heart, although the arteries, as I have ſaid, did not vibrate any more to that degree, did not only vibrate itſelf, but its vibrations were perceiv'd by the eye; not to mention the application of the hand; and eſpecially in the intercoſtal ſpace, at a little diſtance below the left nipple; where, for the extent of three or four inches, whatever was betwixt thoſe two ribs, was rais'd up at every vibration: and if you touch'd this part with the hand, at that time of pulſation, it gave way almoſt like a bladder. What miſchief happen'd to the man afterwards I do not know. What the diſeaſe then threaten'd, or rather what effect it had produc'd, you plainly perceive: and you are beyond a doubt ſenſible, from whence it had its origin.

11. Now, ſince we have begun to ſpeak of aneuriſms, I will not omit to add, on this occaſion, what obſervations I have made on that ſubject, ſince the great number I ſent you before. One relates to an aneuriſm of the heart, and the larger arteries; the other only to an aneuriſm of the aorta. The former of which was not ſuddenly fatal; but the latter almoſt inſtantaneouſly deſtructive.

12. A certain man had already lain two months in the hoſpital, on account of many diſagreeable ſymptoms; all of which were in the thorax. For beſides a fiſtula, which did not reach to the cavity of the thorax, he labour'd under a palpitation of the heart; and a greater-than-natural pulſation.

Theſe two ſymptoms had begun a year before; not being conſtant indeed, but ſo frequently troubleſome, that when the cheſt was laid bare, they appear'd to the eyes of every-one. The pulſe, however, in the wriſts, was not vibrating at leaſt. But ſo great a quantity of puriform matter was expectorated, that, if any-one did not diſtinguiſh it from real purulency, he might ſuſpect that this fiſtula penetrated into the cavity of the thorax.

At length when the patient was dead, his body was diſſected by our Mediavia; who is a very eminent phyſician, as well as an excellent anatomiſt; and the lungs were found to be in a ſound ſtate.

But the heart was not found: and for that reaſon it was, he took care it ſhould be brought to me into the college; together with the neighbouring part of the large veſſels; when I was teaching anatomy there, in the latter part of January, and in the year 1757.

I ſaw, therefore, both the ventricles of the heart dilated; the thickneſs of the parietes, however, not being diminiſh'd. The trunk of the pulmonary artery was alſo more wide than it naturally is; but that of the aorta was very wide, quite to the beginning of the curvature: for the remaining

part

part of it was wanting. The whole internal ſurface of it was white, very hard, and unequal.

13. I had examin'd the ſame parts of a certain beggar-man, which were brought into the college at the ſame time of year; but two years before. What ſymptoms of diſeaſe this man had been previouſly affected with, I could not, for a certainty, learn; except that he had been affected with two ſlight ulcers in one of his legs, which he even then had: and that, on the days near to his death, he had been troubled with a very frequent cough; eſpecially in the night-time, by the concuſſion of which I ſuppoſe the internal hæmorrhage, as you will ſee, to have been accelerated.

This man was brought into the hoſpital, in conſequence of having been ſeiz'd with a ſyncope, as was ſaid, on a ſudden; wherein he was taken for a dying man; and though he ſoon after came to himſelf, he was nevertheleſs quite ignorant of all the circumſtances which had then happen'd: he had, however, at that time, a turgid pulſe, but one that did not reſiſt the preſſure of the phyſician's fingers who examin'd it.

This phyſician was Jerom Triviſani; formerly my very aſſiduous auditor, now a learned man, and a phyſician of eminence: and he it was who related theſe things, and the following; for he had been preſent; with accuracy.

When he enquir'd of the patient what was then troubleſome to him, and where his uneaſineſs lay; he anſwer'd it was a pain in this place, and pointed to the lower part of one of his hypochondria.

Triviſani had ſcarcely gone forwards, to ſee the patients that lay by him, when he was ſuddenly ſeiz'd with another attack; which certainly was not a true ſyncope; for although there was no pulſe, yet the face was rather red: and when the ſpiritus ſalis armoniaci, as it is call'd, was put under his noſtrils, the patient agitated himſelf in ſome meaſure.

Within half an hour, therefore, from the time this new attack had begun, he ceas'd to live; the inteſtinal excrements, from whence that pain in the lower part of the hypochondrium ſeems to have been, being previouſly diſcharg'd into the bed.

When Mediavia diſſected the body, he found the pericardium to be full of blood; and the great artery, in the whole of it that was in the thorax, to be dilated. He was willing, therefore, that this veſſel, and the adjoining heart, ſhould be examin'd by me.

And the heart indeed, when look'd at internally and externally, was of a proper magnitude, and in a proper ſtate. But the artery, from its very beginning at the heart, quite to the ſeptum tranſverſum, was wider than it naturally is; being the leſs in a ſtate of dilatation, in proportion as it deſcended the more: except that, in almoſt the middle of its deſcent, it grew broader for this reaſon; becauſe it protuberated, on one ſide, into a ſegment of a hollow ſphere, the orifice of which cavity, opening within the aorta, was two fingers breadths in diameter.

A lateral protuberance ſimilar to this, but larger, occurr'd betwixt the heart and the firſt branch that took its origin from the curvature of the aorta; ſo that, if the man had liv'd any conſiderable time longer, it appear'd, that to the dilated trunk of the artery, two aneuriſms, in the form of ſacculi,

would have been added beſides; no ſmall beginnings thereof being evidently exiſting in thoſe protuberances. The three arteries alſo, which proceed from that curvature, were wider than uſual; and, as well as the trunk of the whole artery, diſtinguiſh'd here and there, on the internal ſurface, with the white beginnings of oſſification: theſe oſſifications were not large, however, nor thick, nor prominent internally; nor did they ulcerate the internal coat, as they frequently do, when they have attain'd to the hardneſs of a real bone: for this they had not done even where I found them carried on to this ſtate of hardneſs; that is to ſay, in ſome few places of the trunk.

However, at almoſt the interval of an inch and a half above the ſemilunar valves, I ſaw a ſlight tranſverſe fiſſure; which would have been equal in its length to half an inch of Bologna.

To this fiſſure, on the external ſurface of the artery, but a little lower than that, correſponded a foramen, the diameter of which had ſcarcely been equal to two lines of that inch: and the borders thereof were bloody and half lacerated; ſo that it was evident the blood had enter'd betwixt the coats, by means of this fiſſure; and that the external of theſe being, at length, broken through, it had been forc'd out into the pericardium.

14. Similar hiſtories to theſe you have already had from me, particularly in the twenty-ſixth letter (*d*); by way of remark to which I have obſerv'd many things, and among theſe, ſome that relate to the preſent likewiſe: and theſe, therefore, we have no occaſion to repeat here.

But if you ſhould deſire rather to read obſervations of other aneuriſms; you will find one not far unlike ours, in the Programma (*e*) which Waltherus, formerly an illuſtrious profeſſor, publiſh'd at Leipſic in the year 1738: and you may find a great number of different hiſtories, in the treatiſe of that ingenious phyſician at Piſtoia, Anthony Matani (*f*), whether you would conſider them as made on the heart, which he ſaw of a very large ſize, and that from perpetual gluttony (*g*), in one patient, and in another of a magnitude more than twice its natural ſize (*h*); or on the whole *genus arterioſum*, as in an old man (*i*), through the whole of whoſe body, innumerable aneuriſms were diſpers'd; or on the great artery, as in a young man (*k*), the cavities of whoſe thorax and belly were occupied with an aneuriſm, in conſequence of an inveterate lues venerea; or in a man (*l*) whoſe aneuriſm, adhering to the œſophagus, had open'd a way for the blood through that canal, by which means the ſtomach was fill'd.

I could wiſh he had been willing, or able, to compleat the hiſtories; by the addition of thoſe ſymptoms that had preceded, which were peculiar to the aneuriſm; or at leaſt by thoſe which had appear'd laſt of all before death; as he did in that man (*m*), in whom the abdomen, growing tumid before death, reſembled an aſcites; whereas the tumour was not from water, but from blood, which had flow'd down from the trunk of the ſame aorta; about the emulgent arteries, where it was eroded; into the cavity of the

(*d*) n. 13. & ſeqq.
(*e*) De Aneur.
(*f*) De Aneuriſm. Præcord. Morbis.
(*g*) §. 7.
(*h*) not. ad §. 9.
(*i*) §. 27.
(*k*) §. 50.
(*l*) §. 62. (*m*) Ibid.

belly;

belly; and in him, in like manner (*n*), whom the rupture of the pulmonary artery had carried off, by pouring out its blood, within the contiguous bronchium, as I ſuppoſe, in prodigious quantities; and from thence into the fauces.

But this is the very thing of which we ourſelves, not to mention other anatomical phyſicians, are every now and then complaining; I mean, that we cannot always have a proper knowledge of the ſymptoms which have attended the diſeaſe, or preceded death: and this not only for other reaſons ſometimes, but frequently for this reaſon alſo, that the bodies which we, for the moſt part, diſſect, being thoſe of the lower claſſes of the people, it happens, much more frequently than we could wiſh, that by reaſon of very great poverty, or very great ignorance, their diſorders are either not obſerv'd, or not underſtood.

This is the very complaint of that celebrated man Meckel (*o*), prefix'd to the firſt of his two ſections, into which he has divided his otherwiſe accurate, and not common, obſervations of the diſorders of the heart, which he had been collecting for the ſpace of many years.

Nevertheleſs, read them attentively. For they deſerve your notice if any others do; as they relate not only to the preſent ſubject, but are, in a peculiar manner, proper to be added to the Sepulchretum: nor are they all deficient in their ſigns; nay ſome have the hiſtory of the diſeaſe very accurately expreſs'd.

Add to this, that explications, which are certainly very pertinent, are here and there interpos'd; and uſeful animadverſions are thrown in, in order to diſtinguiſh the nature and ſeat of the diſorders in queſtion; as, for inſtance, that we do not ſuffer ourſelves to be carried away, at any time, by the appearances of anxieties and difficulty of breathing, and raſhly accuſe the lungs of ſuch patients, as harbouring the diſeaſe; but that, well weighing all the circumſtances, we impute the diſeaſe to the heart, as it becomes us to do, where we judg'd the lungs to be ſound; unleſs it ſhould happen (as he has admoniſh'd us in another place (*p*) with equal juſtice) that the cauſe of thoſe ſymptoms is in the belly; which circumſtance being quite unobſerv'd, is the reaſon, more frequently than is imagin'd, why any curative method, applied to the thorax, is hurtful, rather than ſalutary.

When you read thoſe obſervations therefore, whether of inflammations of the pericardium and heart, and of ſuppurations of this viſcus; or rather of the fat wherewith it is overſpread; or of coheſions of the pericardium and heart, either by means of a ſteatomatous matter, whereby the heart is moreover compreſs'd; or, as more frequently is the caſe, by a kind of net-work, as it were, and fibres; and theſe tied chiefly to the apex; or of the valves belonging to the heart, being either oſſified, as it is call'd, or grown tumid, ſo as, in part, to ſtop up the paſſage of the orifices; or, on the other hand, of the laceration, and almoſt total deſtruction of thoſe parts; or of the enlargement of one or other of the cavities of the heart; or of the dilatation or conſtriction of the arteries that go off from thence; or of internal roughneſs,

(*n*) §. 63.
(*o*) Hiſt. de l' Acad. R. des Sc. de Berlin A. 1755. & A. 1756.
(*p*) Hiſt. A. 1757.

ſmall ulcers, and oſſification in the great artery itſelf; or, finally, of the dilatation, not of one or other, but of both; that is, not only of the heart, but of the aorta; when therefore you read obſervations of this kind, if you happen to call to mind ſome that I have formerly written to you, which are nearly ſimilar to many of theſe in their circumſtances; I know that you will be very ready to compare them together.

And this was the reaſon why I pointed out theſe obſervations to you, and is the reaſon, at the ſame time, why I refer you alſo to a deſcription of an aneuriſm of the ſame great artery, and of the heart moreover; which another of that famous Royal Academy, I mean that eminent man Roloff (*q*), has given.

For you may compare it with that deſcription, which I ſent to you in the twenty-ſixth letter (*r*), of a man, whom the ſame diſeaſe of the aorta had carried off; the ſame bones being in part conſum'd, and the blood effus'd outwardly in like manner; and you may learn why this other man did not, however, immediately periſh, as mine did.

But as to my hoping, that you would find ſomething not quite unlike the obſervation of Verlichius; in that diſſertation which I mention'd, when ſpeaking of the caſe of Trombelli in the ſame letter (*s*); I was diſappointed in this hope, when, at length, having procur'd that diſſertation, I found the queſtion not to be of ſteatomata, which had been form'd in the coats of the great artery, but of concretions adhering in the cavity of this veſſel, when dilated to twice its natural ſize: and of concretions which have not any very cloſe connexion with the ſide of the artery; ſo that I perceiv'd theſe might be conſider'd as polypous concretions, which had been form'd gradually, in the manner of ſtrata, in aneuriſms.

But of the two obſervations of the heart being ruptur'd, that I have promis'd you (*t*), and that were communicated to me, by that very eminent phyſician, and friend of mine while living, Laurence Mariani, we may now paſs over the firſt, whereof he had written in the year 1750; as you will read it given at large, ſince then, by Galeati (*u*), the very perſon who made the obſervation, and who attended to the cure of the patient for the chief part.

The other, however, I will immediately deſcribe, as I receiv'd it in Mariani's letters dated the fifteenth of March, in the year 1755; and that ſo much the more readily, becauſe, by this means, the number of thoſe obſervations will be encreas'd, in regard to which there can be no doubt; if we conſider thoſe things that had preceded, and thoſe appearances that were found, when blood was ſeen to be effus'd within the pericardium; whether this blood had been previouſly diſcharg'd by the force of diſeaſe, or after death by the careleſsneſs of diſſecters only: that is to ſay, diſſecters who do not at all obſerve, that, while they open'd the pericardium, they had, at the ſame time, wounded the parts included therein; for perſons are not wanting, who ſuſpect that it might have happen'd thus, even in moſt of theſe obſervations; how little colour ſoever they may have for their ſuſpicion.

(*q*) Hiſt. A. 1757. (*r*) N. 9. (*u*) Vid. Commen. de Bonon. Sc. Inſt. Tom. 4. in opuſculis.
(*s*) N. 40. (*t*) Epiſt. 27. n. 10.

15. A phyſician of fifty-eight years of age; being very hypochondriac, if any perſon in the world was, and of a pale and ſallow complexion; was, in the beginning of the year I juſt now mention'd, ſeiz'd with a pain which roſe up from the belly to the thorax; not without ſome convulſive motions, and an anxiety of reſpiration. Theſe ſymptoms indeed were much mitigated by repeated blood-letting. But all the ſymptoms returning in the ſame manner, on the following day, they carried off the patient in a very ſhort time.

The belly ſhew'd no mark of diſorder, except in the liver, and the inteſtine ileum; the latter of which was livid in ſome degree for a conſiderable ſpace, and the former of a much larger ſize than it naturally is.

But in the thorax we found blood effus'd within the pericardium: and this had flow'd thither, through three foramina, from the left ventricle of the heart. This ventricle was ſo dilated, as to form a cavity of three times the magnitude it generally forms.

16. I believe that this phyſician, as I wrote back to Mariani, would not have died of this diſorder; or, at leaſt, not ſo ſoon by a conſiderable time; if he had not been ſo ſubject to the hypochondriac diſorder: and not only becauſe he would not have been oppreſs'd with ſo frequent and ſtrong internal and hypochondriac convulſions, from whence I account for the dilatation of the left ventricle of the heart, and, finally, the perforations thereof; the blood, for inſtance, being very frequently confin'd within that ventricle, which, for this reaſon, was irritated to contract itſelf more ſtrongly, nd expel its contents; but becauſe he would have endeavour'd to obviate the beginning and progreſs of his aneuriſm, if he had not, as is frequently the caſe, referr'd the ſymptoms of it to the hypochondriac diſorder.

For, without doubt, this very great detriment too frequently ariſes from the laſt-mention'd diſorder, that, by reaſon of the greater part of the ſigns, which are common to this, and to organical diſorders, phyſicians heſitate too long on the method of cure; not only in the caſes of others, but particularly in their own; and readily believe the diſorder to be that of the two which they would wiſh it to be; I mean, the more ſlight: in conſequence of which perſuaſion, they neglect to do what is neceſſary to be done for themſelves.

However, although when I promis'd you this obſervation, I ſuppos'd that the inſtances of rupture in the right ventricle of the heart, were much more rare than thoſe of the left; I do not, at preſent, believe them to be ſo much more rare as I then did, notwithſtanding I ſtill believe them to be more rare.

For when I was accidentally looking for ſomething elſe; in a certain diſſertation (*x*) of the celebrated Chriſtian Vater; I lit on the diſſection of a ſoldier, who died *in æſtu venereo*, not much unlike that which I had produc'd from Bohn (*y*), except that a violent and long-continu'd dancing had alſo preceded; and that the rupture was found to be in the right ventricle.

But beſides this, I ſee that two examples, of the rupture of the ſame ven-

(*x*) De mort. ſubit. non vulg. cauſ. theſ. 8.

(*y*) Epiſt. 27. n. 1.

tricle

tricle from other cauſes, are lately referr'd to by the illuſtrious Haller (z). And in the works of this author, you will meet with many teſtimonies of other authors: but ſome of their books I have not by me at preſent; and the obſervations of others, relative to the internal diſorders of the thorax, which I have read formerly, I am not capable of retaining in my memory: otherwiſe I certainly ſhould not have omitted them among others which I have produc'd; but ſhould, without doubt, have quoted ſome which would make more to my purpoſe, and would ſeem to be more worthy of your regard.

I would therefore wiſh you to ſeek them there (a), and ſelect ſuch obſervations, as you may join to thoſe that have occurr'd to me, while I was writing letters to you, wherein I conſider'd the dilatations of the cavities of the heart, and the veſſels adjoining thereunto; and either the cauſe of theſe, and, in particular, the diſorders of the valves, or the effects thereof, as the preternatural reſpirations, pulſes, ſyncopes, and internal hæmorrhages. If you do this, you will have many things to add to the Sepulchretum.

17. Before I make an end of ſpeaking of ſudden deaths, from aneuriſms of the great artery, or of the heart, and their rupture; you will, perhaps, aſk me whether I think that thoſe deaths had happen'd among the ancients alſo, from the ſame cauſe.

It certainly cannot be denied that many died ſuddenly even in thoſe times; as I remember to have ſhewn in other letters to you (b); and could now confirm, if there were occaſion, even from Cicero himſelf, whoſe words, for inſtance, are theſe (c): "But he periſh'd by a ſudden death. Let us ſuppoſe it the caſe; yet this circumſtance would not give us ſufficient cauſe "to ſuſpect poiſon, by reaſon that many perſons die the ſame kind of "death."

Why, therefore, may we not ſuppoſe, that, among the number of ſudden deaths which then happen'd, ſome of this kind, whereof we are ſpeaking, happen'd alſo? Is it leſs probable for this reaſon, that in thoſe times they were more abſtemious in their pleaſures, and did not indulge their paſſions in many reſpects wherein the men of our days are by no means abſtinent?

From their hiſtories, and books, it appears, that they had indulg'd their paſſions and appetites ſtill more. And although it by no means appears therefrom, that they were infected with the lues venerea; which, after having been, at length, brought from America into other regions, is itſelf alſo one of the great number of cauſes of diſorders of this kind, in the heart and arteries; yet, as they abus'd the other cauſes of theſe diſorders, ſtill more than the men of our days, I do not at all ſee, why we ſhould not ſuppoſe them to have been ſubject to their bad effects in the ſame manner.

And I am ſtill more confirm'd in my opinion, when I call to mind thoſe diſpoſitions to theſe diſeaſes, which you will remember that I have already acknowledg'd, with Lanciſi (d), to have exiſted from the firſt formation of

(z) Elem. Phyſiol. Corp. Hum. Tom. 1. l. 4. S. 4. § 13.
(a) Ibid. § 10. 14. 16. 18. & S. 3. § 17. & l. 2. S. 2. § 9.
(b) Epiſt. 26. n. 1.
(c) Orat pro A. Cluentio.
(d) Epiſt. 27. n. 6.

the

the animal. For who can contend that the bodies of the ancients were entirely free from theſe diſpoſitions?

You, therefore, readily perceive, that thoſe perſons are approv'd by me, who have thought that nearly the ſame anſwer ſhould be given to others, who have made the ſame enquiry as yourſelf.

18. And now I was about to ſeal up this letter, when an occaſion was given me, of making an obſervation, which would naturally belong to the letter wherein we treated of the diſorders of the pulſe, and of the encreas'd magnitude of the heart; as we do at preſent. I will therefore add it here.

19. A man, of almoſt ſixty years of age, had died, in the hoſpital, of a difficulty of breathing, on the beginning of the twenty-ſixth of January, of the year 1759. He had complain'd of nothing, from the time of his coming into the hoſpital, but of this difficulty; nor had he gain'd the leaſt advantage from any other remedy but venæſection: and the advantage he gain'd from this was very little and ſhort.

On the tenth day before his death, ſcarcely any pulſe could be perceiv'd; and ſtill leſs on all the days which follow'd: whereas the man was in his perfect ſenſes even to the laſt; took his food with pleaſure; and was able to move himſelf in bed: and indeed, if you except the laſt day, he was always capable of raiſing himſelf up, as often as ever any very conſiderable difficulty of breathing, which oblig'd him to ſit in an erect poſture, came on; and this action he even perform'd with a kind of impetus.

His face was of a red colour inclining to that of violets. He expectorated nothing which was morbid; except that, two days before death, ſome bloody ſpittings appear'd. As to what relates to the beginnings of the diſeaſe, and its cauſes; it was not in our power to learn any thing of this kind: for the man was a foreigner, and conſequently not known here. Yet it was ſuſpected that he had been given to drinking.

The belly and thorax being open'd, by our Mediavia, in the hoſpital, he inform'd me that in the latter was ſome water, but in the former a great deal more; and that the ſtomach was very large: in the thorax, alſo, the right lobe of the lungs adher'd cloſely to the pleura.

This lobe, together with the left, and the other parts that are within the thorax, he took care ſhould be brought to me; according to my deſire: and this he did likewiſe in regard to thoſe in the belly, the large veſſels, and all thoſe that belong to the urinary organs, and the organs of generation, in general; as I was then teaching anatomy in the college.

I therefore examin'd them accurately; nor did I ſee any-thing morbid in the lungs. The pericardium was dilated, and, as the fluctuation ſhew'd, contain'd a fluid, which was a ſmall quantity of water; and that of a yellow colour; with which we ſoon after obſerv'd the internal ſurface of the heart and arteries, when laid open, to be ting'd univerſally; as they alſo reported the ſerum of the blood, when taken from the living body, to have been.

The heart was large: all its cavities except one, that is the left auricle, being enlarg'd, but the thickneſs of the parietes not extenuated; nay, it was even increas'd in ſeveral places, as well as the length in all the parts of the heart; and particularly in the columnæ.

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The right auricle itſelf, being moſt manifeſtly enlarg'd both in length and breadth, ſhew'd the internal faſciculi to be very thick and protuberant. In this cavity was a great quantity of blood; as there was alſo in both the ventricles: and this was very black and half-concreted, but had nothing of a polypous appearance.

The *aggeres*, or tubercles, of the valves of both arteries, were more prominent than uſual: but, although there was ſomething of a bony formation near to one of the ſemilunar valves; there was no where any thing of that kind in any of the valves themſelves. In one of the valves, however, which lie below the orifice of the vena cava, and, in like manner, in the leſſer mitral valve, we obſerv'd a kind of cartilaginous hardneſs in ſome places.

The pulmonary artery was found to be not dilated, and the great artery was undilated likewiſe. But in this laſt-mention'd veſſel, when laid open, quite to the iliacs, and wip'd clean; although thoſe whiteneſſes, which are the marks of future oſſification, were not wanting in ſome places; there was, nevertheleſs, nothing really bony any where; except in one place only, which was far from the heart, and inconſiderable in its ſize.

As to what remains; the urinary bladder; which I inſpected together with thoſe parts I have ſpoken of, before the ſeventieth hour after death; had already begun to degenerate from a ſomewhat livid colour into that of a green; but this was only externally: for internally it was in a natural ſtate, as you will alſo learn from a circumſtance, which, as I cannot explain it here in a few words, I ſhall not omit (*e*) at a more convenient place and time.

20. You perceive that when I adjoin'd this hiſtory, I was taken up with occupations of a public nature. For which reaſon you will not be ſurpriz'd, that I added nothing upon this ſubject. Farewel.

LETTER the SIXTY-FIFTH

Relates to moſt of the Diſorders of the Belly.

1. IF I am not able to do in regard to the diſorders of the belly, what I have done in reſpect to thoſe of the thorax; I mean, to compriſe all the obſervations you are to expect from me in this one letter only; yet at leaſt I ſhall endeavour to comprehend them in as few as poſſible. For they are not in very great number, and moſt of them are but ſhort.

(*e*) Vid. epiſt. 66. n. 10.

However,

However, as, for ſome years paſt, the opportunities I have had of diſſecting the bodies of patients who died of diſorders of the belly, have not been very frequent; ſo I have lit frequently on the ſame appearances, that others have found in the mean while; or previouſly thereto; in diſſecting bodies of this kind.

Wherefore, that you may have wherewith to add to the Sepulchretum, I will point out thoſe appearances to you, as I have done in the letter I ſent you before; obſerving the order of that letter in general.

2. And firſt, as to what relates to injur'd deglutition, I would have you read what a kind of ſtreightneſs Abraham Vater (*a*) obſerv'd, in the lower part of the œſophagus, from the tumefaction of its coats; and not without marks of an excreſcence having preceded in the ſame place: and not only this, but alſo, if you have not already ſeen them, thoſe caſes that are related, from many obſervators, in the commentaries of the very illuſtrious Van Swieten (*b*), of the gula being extremely narrow, in the ſame, or even in ſome ſuperior part; by reaſon of the coats being chang'd into a ſubſtance that was ſchirrhous, and fill'd with vomicæ, or into a cartilaginous ſubſtance; or by reaſon of the cavity of this tube being ſtopp'd up, by a glandular tumour; or becauſe ſome large ſteatomatous tumour, thereto adjacent, or a part of the lungs which had become ſchirrhous, preſs'd upon it, and ſtreighten'd it.

In regard to men that chew the cud, there is nothing that I ſhould add to thoſe things which I have curſorily hinted, in the twenty-ninth letter (*c*); except that the little horn which the father had borne upon his forehead, or a little above it, does not ſeem to have had the leaſt connection with the rumination of his ſon; ſince Sachſius (*d*), although he has produc'd ſo many examples of men that had horns, has not only not remark'd that any of theſe, or their ſons, had chew'd the cud, beſides that one; but, finally, has admoniſh'd us, "that moſt authors had pronounc'd theſe horns to be of the ſpecies "of verrucæ:" and who can take upon him to ſay, that there is the leaſt connexion, or affinity, betwixt theſe verrucæ, and chewing the cud, whether he conſiders the origin, or the nature thereof?

And certainly, that horn, which I very lately ſaw on an old man, who came from a part of the country about Padua, was of the ſpecies of the verrucæ.

For he ſaid that a verruca, or wart; which he had long borne on the left part of the ſinciput; had, four years before, degenerated into this horn; and, by degrees, grown out to that length which it then was of; that is, more than four inches.

Unleſs you preſs'd it back towards the baſis, the man was not in pain: nor was this ſurprizing; for the ſkin, being affected with a kind of phlogoſis, as it were, about the baſis, was rais'd up in ſuch a manner, and coher'd ſo therewith, that you might perceive the horn to be made up of the cutis, according to the opinion of Malpighi (*e*): and, finally, what elſe, in fact, are verrucæ, but the papillæ of the ſkin, produc'd and become morbid?

(*a*) Diſp. de Deglut. Diffic. & imped. Hiſt. 3.
(*b*) Comment. in Boerh. Aph. § 797.
(*c*) N. 4.
(*d*) In Schol. ad Obſ. 30. A. 1. Eph. N. C.
(*e*) Diſſert. Epiſtol. de Corn. Veget.

It was equal to the ſize of a man's thumb at its baſis, from whence, like a cone that was curv'd in an anterior direction, growing gradually ſmall, it degenerated into a point. The whole of it was of a horny hardneſs, and of a ſtriated ſurface longitudinally; which appearance was without doubt, alſo, occaſion'd by the intervals left betwixt the papillæ, when produc'd in a longitudinal direction.

There was this ſingularity in the caſe, that, as a ſhoot, or twig, raiſes itſelf up, and ſprouts, from the ground which is neareſt to its own tree; ſo from the ſkin, which was neareſt to the ſide of the larger horn, another little horn had already begun to grow; being ſimilar to the former, except that, as it was yet leſs than a third part of the length of that, and leſs than a third part of the thickneſs, ſo it was not as yet bent in any direction. But of this enough.

And in regard to pains of the ſtomach; beſides thoſe things which we ſhall take notice of below (*f*), when ſpeaking of the diſcharge of cyſtic calculi through the narrow biliary ducts; there are many obſervations extant which are produc'd by Chriſtian Wencker, together with the hiſtory of a virgin, who had her ſtomach perforated for ſeven-and-twenty years (*g*): all which, or almoſt all, ſpeak of ulcers in the ſtomach.

In the ſame obſervations a frequent vomiting is mention'd; in one even of blackiſh matter (*h*): whereof mention is alſo made by Gothofr. Sandius, in deſcribing "an extraordinary abſceſs of the ſtomach (*i*)." But Jo. Kampfius (*k*) ſpeaks of a frequent vomiting, as join'd with an incredible diſtenſion of all the veſſels of the ſtomach, from black and ſphacelous blood; and, in like manner, with a narrowneſs thereof, and a thickneſs of its coats, and almoſt a change of them into a cartilaginous nature: and Langguthus (*l*) mentions a frequent vomiting, from the coats of the ſtomach being thicken'd to an immenſe degree, and become ſchirrhous; ſo as every-where to aſtringe the pylorus, and render it very narrow: in which ſtate it alſo was in the virgin taken notice of from Wencker.

And the greater part of theſe obſervations agree with thoſe which were, long ago, deſcrib'd to you by me. And the laſt, moreover, bring back to my mind the caſe of a man of Feltri; for whom I was conſulted in the month of January, in the year 1754. The diſſection of whoſe body I had afterwards the relation of, from the celebrated Pujati, who had then repreſented his caſe to me by letter.

3. A man of four-and-forty years of age; being abſent from the place of his habitation, and travelling in mountainous and uncultivated places; took, for a ſlight gonorrhæa virulenta, many remedies of the mercurial kind; being ſuch as he could get, and perhaps badly prepar'd and badly preſerv'd.

While he was making uſe of theſe remedies, the ſtomach was not only irritated, but he was alſo oblig'd to vomit. From that time, whatever he ate

(*f*) N. 12. & ſeqq.
(*g*) Argentor. A. 1743.
(*h*) Obſ. 1.
(*i*) Regiomont. A. 1701.
(*k*) De Infarct. vaſor. ventric. caſ. 5. & 9.
(*l*) Progr. de Tabe ex calloſa pylori anguſtia. Wittemberg. A. 1750.

or

or drank, he began to throw it all up in general: and if he did not discharge the contents of his stomach, he was much more troubled with an anxiety and pain of the stomach; wherewith he was almost always affected, but slightly; and he was troubled with a singultus also: but if he took food afresh, after having thrown up what he had taken before, he then frequently retain'd it.

He spat out a great quantity of saliva, which was thick and ill-tasted. His belly being costive, he discharg'd nothing, upon milk being thrown up, but hard globules of excrements. And, although the pulse had not any circumstance, as yet, which was contrary to the natural appearances; there was, nevertheless, a considerable wasting of flesh.

Many and various remedies were made use of against this disease; but all to no purpose: so that, at length, the poor man was under a necessity of yielding to his fate.

The stomach had its pylorus in a state of contraction, and very hard: near the pylorus was a little ulcer: and on the remaining part of the internal surface, were a great number of glands, as it were, scatter'd at some distance from each other.

4. Come, now let us touch slightly upon those things that relate to the diseases of the intestines; and first upon those that relate to the diseases wherein the stomach also is often wont to be affected.

The celebrated anatomist Phil. Conr. Fabricius (*m*) has, now and then, in dysenteric bodies, seen, besides the large intestines, the small intestines also, and the stomach inflam'd. So, in one body, he even saw the large intestines more corrupted, and cover'd over with a bloody pus; the small intestines, however, being at the same time all affected with a sphacelus, and the stomach itself inflam'd: although, in another body, he found the seat of the dysentery to be in the colon only, and the intestinum rectum.

But Henricus Henrici (*n*) found the stomach to be thin, and flaccid, in a woman whom a cholera morbus, that attack'd her very violently, had reduc'd to the most extreme weakness in thirty-five hours; and the upper part of it to be affected with a kind of spot obscurely red, and resembling a lividness from contusion; spots similar to which were here and there in the intestine colon: but these were less in their size.

And this observation prevents me from omitting my dissection of another woman, who had been carried off by a flux of the intestines: which dissection was perform'd before the latter end of January, in the year 1753.

5. The body of an old woman, who had been, by means of a long and obstinate diarrhæa, reduc'd at length to the greatest state of weakness, and loss of flesh; and even to death itself; was brought into the college for dissection. We only, however, examin'd the cavity of the belly, as we soon after got a male body; which was a much more proper subject for prosecuting the anatomical demonstrations.

The abdomen; which was so emaciated, that it had, under the skin, not an adipose membrane, (a rare circumstance even in the most lean and ema-

(*m*) Progr. quo Obs. Anat. &c. Helmst. A. 1754. M. Oct. pag. 19. & not. *v*.

(*n*) Dissert. de Cholera morbo. c. 1. § 20.

ciated women) but a thin membrane, like a net-work, that retain'd ſcarcely any the moſt ſmall remains of fat in any part of it; when laid open, had neither any ill-ſmell, nor immediately ſhew'd any thing that was worthy of remark; except that the gall-bladder, deſcending below the liver, and that in a conſiderable degree too, the bile, which was there in a pretty large quantity, and of a dark colour, had ting'd the neighbouring inteſtines with a yellowneſs, to a much greater extent than it generally does.

But neither any of the ſmall inteſtines, nor the ſtomach, which was contracted, had any mark of diſeaſe. Only ſome parts of the large inteſtines; as thoſe, which, in the colon, and the cœcum, are neareſt to the valve of Bauhin; were internally red from inflammation.

Yet the rectum was almoſt univerſally livid, in conſequence of inflammation; and was here and there tumid internally: but eſpecially at the lower part; from whence a ſpot, in the form of a circle, as it were, extended itſelf upwards to the breadth of a man's thumb; being ſomewhat ſoft and prominent, as if it had been form'd by blood half-coagulated there, under the internal coat.

And above this part were protuberant, either true lenticular glands, or glands ſimilar thereto; lying at a diſtance from each other, and being of a reddiſh colour inclining ſtill more to brown.

However, ſome of the glands in the meſentery, although they had the appearance of being ſound, were larger, nevertheleſs, than was ſuitable to that age. And there was an appearance which is pretty frequent; I mean, that the trunk of the great artery was ſomewhat hard in ſeveral places, and whitiſh, on its internal ſurface, by reaſon of many incipient oſſifications.

But there was this peculiar circumſtance, that if you examin'd the ſame ſurface, the coats which make up the left ſide, and poſterior part, of the artery, ſeem'd to be join'd to each other at an angle; and not in the manner of a curv'd line.

6. Thoſe things that I ſaid juſt now of the rectum, bring to my mind that membrane, which hung out from the anus of a Jewiſh merchant (*o*), and which had not been protruded without blood and deprav'd ichor, and preceding violent pains of the ſame inteſtine; though he liv'd in good health, nevertheleſs, from the year 1729, to the beginning of the year 1748. I now add, that he liv'd ſo long as to the year 1758; in which year I have heard that he was carried off by a far different diſeaſe; that is, a diſeaſe of the thorax.

But why I make no other remarks to the obſervations I have given, of the man, and of the old woman, you readily perceive; as you know how much I hate repetitions, and remember ſufficiently, as I ſuppoſe, what I have already written to you upon diſeaſes of this kind (*p*). And this I would have you ſuppoſe to be ſaid of the greater part of the other obſervations likewiſe, which will be taken notice of below.

Of the imperforation of the anus in particular, and of the prolapſus of it, I have nothing to add; except that I lately read an obſervation of the

(*o*) Epiſt. 31. n. 19. (*p*) Epiſt. ead.

celebrated

celebrated Philip Adolphus Boehmerus (*q*), made upon the dead body of a new-born infant: to whom it had happen'd, by reaſon of the anus being imperforate, that, from a part of the inteſtine colon; which had been ſeiz'd with a ſphacelus, and ruptur'd thereby; ſo great a quantity of meconium was pour'd out, that the abdomen was very tumid and hard.

I have likewiſe read, in the hiſtory of the Royal Academy of Sciences (*r*), the account of the diſſection of a boy of three years of age, who had always diſcharg'd the inteſtinal excrements through the urethra; into which the rectum inteſtinum terminated: and the cauſe is there ſhewn why theſe excrements were at length retain'd.

And in regard to the prolapſus ani, that which the illuſtrious Haller ſignified to me by letters, dated the twenty-ſeventh of January, in the year 1758, I will here faithfully copy to you.

"I lately ſaw," ſays he, "a ſurprizing ſpectacle; and one which I ſhould "ſcarcely have given credit to, if it had been related to me by another per- "ſon; I mean a prolapſus of the large inteſtine, in which you might ſee "the valve of the colon itſelf; being very eaſy to be diſtinguiſh'd, and lying "open. The villous coat was very red; and when ſprinkled over with nitre, "ſweated out a fluid: but was in other reſpects unmov'd. The diſeaſe is "of long ſtanding: the inteſtine has often been replac'd to no purpoſe; as "it every-now-and-then ſlips out again, and the ſurgeon, during that ope- "ration, evidently feels the ſtomach, through the colon, with his hands."

7. But to the pain of the inteſtines, and even to the iliac paſſion, relates the programma of the celebrated Kaltſchmidt (*s*), which will afford you pleaſure and profit in the peruſal.

For beſides that he found the whole tract of the inteſtines inflam'd; and moſt in that part where the ileum was torn aſunder, near to the valve of Bauhin; he ſaw this inteſtine quite obſtructed, and not only in that part, but for the length of an ell, with fœces ſo hard, and ſo compacted together, that a pound of quickſilver, which had been given to the patient, could not make its way through them: he remark'd other things moreover, and among theſe the cauſe of preternatural hunger, wherewith the man had been frequently troubled; that is to ſay, the pylorus twice as large as it generally is in other bodies.

I who have already ſent you many obſervations upon the iliac paſſion heretofore, will now add only one upon the pain of the inteſtines: and this I made in the college likewiſe, at the ſame time of year as I made the former; but in the following year 1754.

8. An old woman, of fourſcore-and-ſix years of age, who had formerly been a cook, had already labour'd under a paralyſis of various kinds, in the lower limbs, for fifteen months; the three laſt of which ſhe ſpent in the hoſpital; when being there, at length, ſeiz'd with an acute fever, and a pain under the region of the hypochondria; not without great thirſt, and a redneſs

(*q*) Vid. Act. Erud. Lipſ. A. 1758. M. Januar.

(*r*) A. 1752. Obſ. Anat. 4.

(*s*) De Ileo a ſcrupul. piror. meſpil. perfor. Jenæ A. 1747. M. Octob.

of

of the cheeks; and all theſe ſymptoms continuing; her life was brought to its final period within ſeven days.

The abdomen, when look'd upon externally, ſhew'd no diſorder, but a little tumour in one of the groins: and this I took for a hernia; nor was I deceiv'd; for I ſoon after ſaw that it contain'd a ſmall part of the inteſtine: and indeed, I ſhould have conſider'd it as the cauſe of the pain, if the woman had ever complain'd of that place; and particularly when the pain was violent.

But while the abdomen was incis'd, I ſaw that the muſcles thereof were green; and when the cavity was laid open, that the inteſtines and meſentery were variegated with green and red; and were infected with a very violent ſtench: ſo that, although the body was open'd at only the third day after death, and at ſuch a time of year, it was neceſſary to bury the carcaſe immediately; after having juſt obſerv'd a few things, which I ſhall immediately inform you of, in the genitals and the liver.

The vagina had ſome ſpots on its internal ſurface, lying at a diſtance from each other, and degenerating from a red colour, into that of a dirty yellow. Of the teſtes, there were but the moſt inconſiderable remains.

The latter of theſe circumſtances is to be aſcrib'd to age; and the former to inflammation, which that part had contracted from the neighbouring inteſtine, that was already beginning to degenerate into a gangrene; as to the beginning of a peculiar diſeaſe, is to be aſcrib'd a ſlightly unequal protuberance, of a red colour, inclining to blackneſs, which was prominent from the upper and internal ſide of the fundus uteri; and, by diſſection, ſeem'd, in part, to be made up of a few veſicles full of a fluid.

And in the liver were peculiarities, ſome of which were to be deduc'd from the original formation; others, probably, from early youth; and others entirely from diſeaſe. From the original formation may we deduce that unuſual figure of the lower border, ſo that being deeply curv'd into the form of an arch, betwixt the right and the left lobe, it had the right lobe on one ſide, and the left on the other, going down to an almoſt equal extent, which at other times the left lobe is not wont to do: and from early youth; if any place is to be given to the ſuſpicion which I formerly (*t*) communicated to you; that of a deep parallel ſulcus, paſſing over the convex ſurface of that viſcus, from the upper part towards the lower; but, certainly from diſeaſe, two hydatids upon the ſame ſurface; one on the right ſide, and the other on the left; both of them cover'd with the coat of the liver, both of them ſurrounded internally with a membrane, which; being unequal with rugæ, or rather with a kind of bands or fillets, as it were; contain'd, in the former, a conſiderable and very deep cavity, and in the latter a very ſmall one.

From theſe hydatids, and ſtill more from that rare figure of the liver, you perceive that this was the old woman, from whom I was willing to deſcribe, more fully and clearly, both theſe circumſtances, which I only hinted at before (*u*) in a curſory manner.

9. But now to thoſe obſervations which I have produc'd, when writing to

(*t*) Epiſt. 56. n. 17. (*u*) Epiſt. 58. n. 42.

you

you of pain and tumour in the hypochondria, I would have you add theſe, ſome of which relate to the liver, others to the ſpleen, and one of them even to the ſtomach; and in regard to the liver, that in particular wherein (*x*) a vomica thereof is deſcrib'd, which " open'd into the right cavity of the " cheſt."

I heartily wiſh the very ingenious Richertzius could have inform'd us, what ſymptoms had preceded death, as well as have deſcrib'd with exactneſs and accuracy, the appearances which he found in the body after death.

For you will, without doubt, remember, that, when I wrote to you (*y*) a very rare obſervation, and perhaps the firſt of a caſe of that kind, from the papers of Valſalva, I complain'd of the deficiency of a great number of circumſtances; although he did not fail to remark many things which had exiſted in the patient.

And that I the more complain of in this other obſervation, in proportion as it appears; from the inſpection of the right lobe of the lungs, and from the inſpection of the pleura on the ſame ſide; that the patient had been troubled for ſo long a time, with an empyema of that ſingular kind; and from the magnitude of the liver, and the purulent cavity in it, that he had ſuffer'd the moſt violent uneaſineſſes there alſo.

There, I ſay, for at Paris it happen'd, when a certain patient (*z*) complain'd " of a very great pain in the right hypochondrium," that, though the ſurgeon denied the pain to be ſeated in the liver, contrary to what the phyſician had pronounc'd, the liver was nevertheleſs found to be " inflam'd," when the body was open'd after death.

But if, by reaſon of " ſome delirium being join'd, at intervals," to the inflammation of the contiguous diaphragm; which however neither the ſurgeon, nor the celebrated author, would have conceal'd; you ſhould chooſe rather to ſuſpect the cauſe of the pain to have conſiſted therein; you muſt firſt conſider other obſervations, and among theſe ſome which relate to the diſcourſe I have begun.

For I do not doubt, but that woman was afflicted with conſiderable uneaſineſſes in the ſame hypochondrium alſo, in whom, as you may ſee in the ſame place (*a*), the liver was found to be large, and not inflam'd; though it is to be lamented, that thoſe ſymptoms, which appear'd in the living body, could not be made known.

But I certainly know, that, in the diſſertation of the celebrated Rudolphus Jacobus Camerarius and Jonas Brunnerus, which recounts " the appearances " found in the viſcera of thoſe who died of an hepatitis (*b*)," the caſe of a woman, and of a young man likewiſe, is produc'd; the former of whom having made " a very great complaint of the right hypochondrium," and the latter having had " an almoſt intolerable pain" in the ſame place; the liver was in both of them very large and hard, from a calculous matter; and, in the woman moreover, encreas'd by a very conſiderable atheroma.

(*x*) Obſerv. Viſcer. Abdom. Labis Epicris. Obſ. 2.

(*y*) Epiſt. 36. n. 4. & ſeq.

(*z*) Vid. Bulchwald. Obſ. Quadrig. Obſ. 2. Ætiol. §. 9.

(*a*) Obſ. 2. cit.

(*b*) cit. 1.

Now then, will you aſcribe all the pain, in theſe patients likewiſe, to the adjacent parts, which the tumour and weight of the liver compreſs'd, and drew downwards?

If you think you may take upon you to make this aſſertion the more freely, becauſe a calculous matter had obtunded the ſenſation of the liver; whatever this ſenſation may be; by indurating it; I ſhall not be very obſtinately averſe to your ſuppoſition: for in whatever manner you chooſe to explain the caſe; the obſervations which I have here added to the former, will always relate to pains and tumours of the right hypochondrium; as I have promis'd you they ſhould; in the ſame manner as thoſe which immediately follow will relate to the left hypochondrium.

10. That tumour of the ſpleen was certainly large, eſpecially as it was in a boy of nine years of age, which is deſcrib'd by the celebrated Kaltſchmied (*c*); in which tumour, if examin'd with the hands, the boy perceiv'd a pain; unleſs you ſhould chooſe rather to attribute this to the enlarg'd pelvis of the ſubjected kidney, which was then preſs'd upon, and prick'd, by a rough calculus therein included.

But ſometimes, on the contrary, the pain is not found to be in the tumour of the ſpleen, but in the lower part of the left ſide which inclines to the back; as in a man, who, having been afflicted with other ſymptoms beſides, which reſembled a phthiſis, ſhow'd at length, after death, nothing at all morbid in the lungs; but ſhow'd an enlargement of the ſpleen, which was likewiſe very hard and heavy, in conſequence of being made up of a denſe ſubſtance, which Abraham Vater (*d*) compar'd to a gammon of bacon ſomewhat harden'd by the "ſmoke."

The tumour of the ſpleen is alſo deceptive, when it extends itſelf greatly; or when it contains what it is very rarely wont to contain. And an example of both theſe ſtates taking place, at the ſame time, in one and the ſame man, you will have from the Hiſtory of the Royal Academy of Sciences at Paris (*e*).

For he being ſeiz'd with the ſigns of an aſcites; among which was a very manifeſt fluctuation of a fluid in the belly; and having twice undergone the operation of paracenteſis, and had pus drawn off inſtead of water; and having died the day after the ſecond operation; had the ſpleen enlarg'd to ſuch an enormous ſize, that, reaching from its natural ſeat to the bones of the pubes, it cover'd the viſcera before and on the ſides, and compreſs'd them all, in conſequence of its containing as great a quantity of pus, as had been drawn from the living body; and a very great quantity had been drawn.

That pus indeed, as well as water, has been ſometimes found in the ſpleen, I have taken notice to you before (*f*); but I do not remember that it has been ever found in ſuch an immenſe quantity. In ſo great an extenſion of a viſcus, which is not large, and a ſenſation of a fluctuating fluid, who would have blam'd the ſpleen in particular? The ſeat of the pain, except in the beginning perhaps, could not have ſhown this.

(*c*) Progr. de hoc Tumore.
(*d*) Diſſert. de Schirrhis Viſcer.
(*e*) A. 1753. Obſ. Anat. 5.
(*f*) Epiſt. 36. n. 18.

For the violent colic pains which had at length come on, could not be confin'd to that one part of the belly only; as they certainly were from the compreſſion of the inteſtines. The only circumſtance from whence a ſuſpicion might ariſe, was, that the diſorder had ſucceeded a quartan fever, which laſted eighteen months or more.

In that admirable caſe alſo, which you will read of in the very excellent Fantonus (*g*), who would have ſuppos'd, that, in an abſceſs open'd at the navel, the ſpleen lay hid? It was only the moſt ſlight conjecture, that could be drawn from thoſe very violent pains, of which the patient had complain'd; and eſpecially below the left hypochondrium.

Yet the ſpleen had fallen down to the navel, from whence it was not only extracted at that time, but the woman having died five years after this extraction; and having conceiv'd and brought forth in the mean time; leſt any one ſhould doubt of the extraction of this viſcus, no ſpleen was found in any part of the body upon diſſection; "only cicatrices appear'd in the "neighbouring parts; to which it is wont naturally to adhere."

11. But becauſe there is another viſcus in the left hypochondrium, beſides the ſpleen; I ſhall preſently point out a ſingular hiſtory of the tumefaction of this viſcus alſo; if you will firſt give me leave to ſpeak of the ſpleen being oſſified, or become ſtony; and add this; for you will remember I have written to you on the ſame ſubject before (*h*); that I obſerv'd, in an old man, already taken notice of in the ſixty-ſecond letter (*i*), an account of the oblique figure of the cranium.

A part of the membrane of the ſpleen; as much as could be cover'd by a circle, the diameter of which was equal to two fingers breadths; ſeem'd to be become ſtony: and the ſubſtance of the viſcus adher'd cloſely thereto.

Having taken off this part of the membrane, and macerated it ſome days in water; and ſcrap'd away the adhering ſubſtance of the ſpleen; I ſaw that there was nothing elſe remaining in the membrane, but a thin, and in ſome places deficient, incruſtation of a matter evidently tartareous.

I was not ſorry, therefore, I had left a place for tartareous matter in that thirty-ſixth letter likewiſe; nor yet that I had ſaid this induration generally begins from the convex ſurface of the ſpleen, and extends itſelf from thence to other parts.

For, when I took away the membrane next to the indurated part, I did not indeed perceive it to be very hard, but grown rigid nevertheleſs: and all theſe circumſtances I ſaw in that ſurface of the ſpleen which was contiguous to the diaphragm.

But whether I rightly conjectur'd, that this might be aſcrib'd to the alternate compreſſion of that muſcle, I ſometimes doubted ſince then; as I have obſerv'd that the ſurface of the liver, which is liable to the ſame compreſſion, does not contract the ſame induration, unleſs it be very ſeldom, and by accident.

(*g*) De Obſ. Med. & Anat. Epiſt. 1. & 6.
(*h*) Epiſt. 36. n. 14. & ſeqq.
(*i*) n. 16.

Now I will point out that ſingular obſervation of the ſtomach ſwelling continually, and not without uneaſineſs, from Lieutaud (*k*).

The patient complain'd of a ſenſe of plenitude, or weight, in the region of the ſtomach, which was always more elevated than it naturally is; he being at firſt cachectic, and after that dropſical; and of certain pains about that region, which were by no means acute. Deglutition was quite eaſy and free: but the belly was coſtive; ſo that, without giving purgatives, there was no diſcharge at any time, and even then but little.

There was a nauſea, and an inclination to vomit: but neither nature nor art could actually bring on a vomiting: and, although very little aliment was taken in, during the whole courſe of this diſeaſe; and though in the latter part of it ſcarcely any-thing was taken; yet that ſenſe of plenitude, or of weight, did not by any means decreaſe.

Finally, after death the ſtomach was found to be immoderately extended and full: and all the inteſtines; though ſo narrow, as not, in the whole of them, to exceed the bulk of the ſtomach; were perfectly pervious, as well as the pylorus; ſo that it was natural to think, from theſe appearances, which were ſeen in the dead body, and from what had been obſerv'd in the patient when living, that the diſorder ought to be referr'd to a kind of paralyſis of the ſtomach.

And, ſince we are ſpeaking of tumours of the belly, I will not ſcruple to aſſert, that, if this patient had liv'd ſome time longer, a tumour of another kind would certainly have made its appearance, in the ſame ſide of the belly. For the cauſe of a very ſevere pain, which had ariſen there fifteen days before death, was found to conſiſt in blood effus'd betwixt the oblique muſcles, on the left ſide, to the quantity of two pounds.

But even the right hypochondrium was not without diſeaſe. For the liver contain'd many very ſolid ſtones; ſome of which were very evidently prominent above the ſurface of that viſcus, and were nearly of the ſize of a filbert.

12. And in regard to theſe calculi; which were, without doubt, of the biliary kind, whereof I have already written many things (*l*) to you, and not only of hepatic calculi, but of cyſtic alſo, and that chiefly; a few things now remain to be added: and firſt I ſhall give you an obſervation from a letter, which happen'd lately to fall into my hands again, and had been ſent many years ago by a phyſician of ſome note, who had formerly been my very attentive auditor. And thus it was that he wrote what he himſelf had then been witneſs to.

13. An old man, who had reach'd quite to his ſixtieth year, without any diſeaſe that was worth notice, was ſeiz'd with violent pains at his ſtomach; with a bilious and copious vomiting, attended with obſtinate coſtiveneſs, and a fever not of a very acute kind.

The phyſician, by giving him freſh-drawn oil of almonds, and ſome other remedy of that kind, mitigated the diſeaſe, but did not carry it off; the pains ſtill returning every-now-and-then; till at length two drachms of mag-

(*k*) Mem. de l'Acad. R. des Sc. A. 1752. (*l*) Epiſt. 37.

neſia

neſia being frequently made uſe of, the patient ſeem'd to himſelf to be perfectly cur'd.

But having, contrary to the advice of his phyſician, return'd to his former cares and occupations, and eaten unwholeſome foods; his pains return'd alſo; but were ſoon driven away by the uſe of the magneſia.

In a few days, however, the phyſician was much chagrin'd to find, that the pulſe was become ſmall, and had even ſome little intermiſſion; that the appetite for food decreas'd; but particularly, that, ſome days after, the patient diſcharg'd, by ſtool, a quantity of black matter, which reſembled the atra bilis of the ancients.

Finally, a very conſiderable fainting-fit having come on, and ſoon after gone off, the patient began to be ſomewhat delirious, and to complain of a very violent pain in his head. After ſeven days, therefore, being ſpent under the influence of theſe diſorders, (that is, about the ſixth month from the beginning of the diſeaſe) not without intermiſſions of the pulſe, and great dejection of the ſtrength, he died.

The abdomen being open'd and laid aſide, no diſorder was found in the ſtomach; nor in the liver, except that it was ſomewhat paler than it generally is. But the veſicula fellis was almoſt three times larger than it naturally is; and contain'd a very black bile, or rather dregs or lees of bile, in which were eight calculi of different figures; and all of a very extraordinary magnitude: beſides which, others were ſeen, to the number of ten, in the very parietes of the veſicle; being not larger, in their ſize, than the granules of millet-ſeed.

14. Theſe very ſmall calculi, obſerv'd in the parietes of the cyſt, certainly belong'd to the claſs of thoſe which I have heretofore taken notice of in the glands of this veſicle; or at leaſt betwixt its coats (*m*).

And perhaps ſome calculi a little larger than theſe; by endeavouring to paſs through the cyſtic and common duct, though not obſerv'd in the inteſtinal fœces; excited thoſe pains of the ſtomach, and vomitings: whereas thoſe eight very large ones, which lay ſtill in the veſicle, by reaſon of their magnitude, did not give the leaſt token of their exiſtence; not even by a ſenſe of weight; perhaps becauſe we eaſily accuſtom ourſelves to any ſenſation, which comes gradually upon us.

You ſee here alſo, that no mention is made of the jaundice. And certainly that very noble man; for whom I was not long ago conſulted by letter; after having ſpent all his nights without ſleep, for a long time together; by reaſon of a very violent pain, wherewith he was ſeiz'd, at the region of the pylorus, and perpetual efforts to vomit; did but juſt, at length, begin to be ſomewhat icterical at intervals.

Yet the cauſe of the diſeaſe was ſhewn by the cure; for the pain deſcended gradually from the ſtomach towards the navel, and from thence to the region of the pubes, where it remain'd ſome days; and, at length, by the diſcharge, from the rectum, of two bodies not very ſmall, and almoſt of a cubical figure, all pain, of both the ſtomach and liver; for this viſcus was in pain; as well as all pain of the inteſtines, was carried off.

(*m*) Ibid. n. 21. & 29.

Theſe bodies were of a yellowiſh colour, and made up of ſtrata, containing a nucleus, and catching flame; ſo that, conſidering all circumſtances, you would not doubt but theſe were cyſtic calculi. Yet ſee how much difference there is in the ſame diſeaſe, in different bodies.

Fr. Slare (*n*) obſerv'd, that a noble woman, who was very much tortur'd with pains of the liver, had perceiv'd great eaſe "immediately" after having diſcharg'd, into the inteſtinum duodenum, two cyſtic calculi at different times; and that thoſe calculi had remain'd, "but a few hours only," in the whole courſe of the inteſtines, notwithſtanding they likewiſe were by no means ſmall; for one exceeded the diameter of the middle finger, and the other, though ſomewhat more ſlender, was not much ſo nevertheleſs.

But in regard to calculi of this kind; thoſe things which the very excellent Ellerus (*o*) has written on the ſubject, it behoves you to read: and his explication of the nature, and origin, of that ſtone in particular, which had been diſcharg'd through an abſceſs of the right hypochondrium, together with the pus, you will doubtleſs, confirm by thoſe three ſimilar examples, which I have given you in the thirty-ſeventh letter (*p*).

And you will, at the ſame time, learn, what this very experienc'd man has alſo advanc'd, on that occaſion, in regard to the origin of renal calculi; and even of a ſtone which he ſaw lying hid betwixt the coats of the urinary bladder.

But to other diſorders of the kidnies relate not only the dropſy of theſe viſcera, or a diſtenſion thereof by yellow ſerum, but the caſe of their ſubſtance being in great meaſure annihilated, and of their adipoſe membrane being indurated; and, in like manner, in a woman troubled with an aſcites, that of one of the kidnies being enlarg'd to twice its natural ſize; the other being leſs than it naturally is, and having the ureters, and the blood-veſſels, extremely contracted.

Theſe obſervations of Bohemerus, you will find related in the ſame book that others, which I pointed out to you above (*q*), are related.

And if in turning over that book, you ſhould happen to light on a paſſage, where *Morgagnus* is ſaid "to have endeavour'd, lately, to confirm, by new "arguments, the opinion of a paſſage, for the urine, from the ſtomach to "the bladder;" do not be ſurpriz'd, as you know that I was always in the contrary opinion, and ſtill am ſo; but aſcribe it to the profuſe liberality of the printers towards me: for, by adding one ſingle letter, that is *g*, they have been kind enough, more than once, to pay me the compliment of things which belong'd quite to another perſon.

15. Thoſe things which I ſaid juſt now of calculi, do likewiſe relate to diſorders of the belly, as well as the preceding; and not only thereto, but alſo to the diſcourſe of tumours of that cavity, which I had begun, and which I probably ſeem'd to you to have forgotten, relate thoſe obſervations that I lately pointed out from Bohemerus, of the dropſy of the kidnies, and of the aſcites.

(*n*) In Epiſt. edita a Sigiſm. Koenig in ſuo Lithogen. hum. Specim.

(*o*) Hiſt. de l'Acad. R. des Sc. de Berlin, A. 1755.

(*p*) N. 52.

(*q*) N. 6.

And

And the programma, publiſh'd by Hamberger, *De Ruptura Inteſtini Duodeni*, may contribute to illuſtrate ſome things which we have hinted at, when treating of the tympanites; as this rupture of the duodenum was follow'd by a very ſhort indeed, but very great, and fatal, tumour of the tympanitic kind.

I would, therefore, wiſh you to read it over again. For, as I conſider the many and various things which I have written to you, upon other tumours of the belly; and likewiſe that not a few things muſt be ſaid preſently, on the ſubject of another dropſy; I cannot inſiſt much now upon every-thing that may ariſe.

Wherefore, I ſhall here ſay nothing more, in regard to the meſentery, but that I would have you take out, from the writings of thoſe celebrated men Henricus Henrici (*r*), and Joannes Fantonus (*s*), the obſervations which then eſcap'd me, and which may be join'd to the Sepulchretum. For the latter has given an account of a large tumour of the meſentery; and the former of a conſiderable number of abſceſſes of the ſame viſcus.

And theſe obſervations are indeed uſeful; but more uſeful ſtill are thoſe wherein the ſeat of the viſcera being chang'd, the phyſician may be deceiv'd thereby. We will therefore add as many; which you may join with that remarkable one of Valſalva's (*t*), of the ſtomach being prolaps'd out of its ſeat, and forming a tumour, in a part where the ſtomach is not wont to be naturally.

One of theſe is that very obſervation, which we have in part taken notice of above (*u*), from the celebrated Langguthus: for, as a ſchirrhous tumour of the coats, which ſurrounded the pylorus, had ſtreighten'd this orifice by its immenſe thickneſs; ſo, by its weight, it had mov'd the ſtomach quite from its place, and made the upper orifice thereof be diſtant from the diaphragm, by the ſpace of a very large ſpan; at the ſame time that the fundus was ſtretch'd out below the navel, into the hypogaſtric region; and, by its ſituation, and moveableneſs in the living body, reſembled a large tumour form'd upon the omentum.

And the other obſervation is that of the celebrated Schlenker (*x*), who ſaw the ſtomach "reaching from the pylorus quite to the os pubis, in a perpen-" dicular line." The proper cauſe of which prolapſus does not appear from the remaining part of the hiſtory; for the principal diſeaſe, on account of which he then wrote, was among the other viſcera of the belly, in the left ovarium, which was "ſtony, large, and ponderous;" and well deſerves to be put in the liſt of thoſe tumours of the ovaria, which I have taken notice of heretofore (*y*), and that in conſiderable number.

Among theſe tumours, however, I believe that ſome ſpoken of by Fantonus, whom I have ſo often commended (*z*), are deficient; as when the left ovary was ten times larger than its natural ſize, and ſchirrhous; or when the right ovary contain'd within it a hollow, whitiſh, and hard globe, made up

(*r*) Diſſert. de Abſceſs. Meſent.
(*s*) De Obſ. Med. & Anat. Epiſt. 8. n. 9.
(*t*) Epiſt. 39. n. 14.
(*u*) N. 1.
(*x*) Diſſert. de Singulari Ovar. ſine Morb.
(*y*) Epiſt. 38. n. 54. & ſeqq. & Epiſt. 39. n. 37. & ſeqq.
(*z*) Epiſt. cit. 8. n. 13. & 16.

of

of a ſebaceous matter, and ſimilar to a pigeon's egg; or, finally, when both of them were turgid with a yellowiſh ſerum, in the manner of a diſtended bladder.

16. But, although I have not taken notice of a greater number of examples of tumours in the teſtes of women, of any ſpecies, than of this third; when, writing to you upon the encyſted dropſy (*a*), I at length went ſo far as to enquire, whether, and in what manner, dropſies of the peritonæum, of the tube of the uterus, and others of that kind, can be diſtinguiſh'd from the dropſy of the ovarium; yet ſome obſervations of the ſame kind remain, which I think it would not be without advantage to point out; briefly indeed, but in ſuch a manner, that you may eaſily compare them with the former; and with thoſe which I then ſpoke of; and determine what ſeems the beſt method to you, not only in diſtinguiſhing, but in curing diſorders of this kind.

To begin with the more ancient, and come down to the more modern; in the year 1671, was publiſh'd, by Ludovicus Salzmann (*b*), an inſtance of a woman, in whom, after a long-continu'd ſuppreſſion of the menſtruous blood, the abdomen was gradually rais'd up from the left hypogaſtrium, towards the left hypochondrium; all ſymptoms of an aſcites being abſent, and the face being of a pretty good colour.

But from the time that ſhe fell upon the ground with ſome impetus, the ſigns of an aſcites ſoon came on, together with a large tumour of the whole abdomen; and ſoon after ſhe died.

In the belly; beſides water, and pus, in ſuch a quantity as was to be expected from ſo great a diſtenſion; a large tumour was found covering the viſcera, containing many cyſts of different magnitudes, and each of them in general fill'd with a different matter.

And as to the common coat of the tumour, although it was every-where connected, by membranes, to the contiguous parts, and the uterus itſelf was found; yet, as the tumour had begun in the living body, "under the left "groin," and is ſaid to have been ſeen there, in particular, in the body after death; you will not quite give up all pretences to ſpecioufneſs and probability, if you ſuppoſe it to have taken its origin from the left ovarium: although you would, perhaps, rather chuſe to refer it to the claſs of other encyſted dropſies, and dropſies that have ariſen from other parts.

Of which kind that certainly was, whereof I read, not long ago, among the medical obſervations of the celebrated Weſzpremus (*c*), as found after death in the body of a man, who; having been conſider'd, for two years together, as a perſon labouring under an aſcites; ſhew'd a ſtrong-ſmelling fluid, in which ſwam large hydatids, to be ſhut up within a kind of vaſt bladder, the neck of which was implanted betwixt the true bladder, and the inteſtinum rectum; whereas the remaining part was connected to the neighbouring parts only by a cellular contexture.

And of this kind, except that no hydatids were contain'd in the limpid water, I now ſee, from the hiſtory more accurately deſcrib'd by the celebrated

(*a*) Epiſt. indicatis 38, & 39.
(*b*) De Abſceſſu interno miræ magnitud. &c.
(*c*) Obſ. 11. Caſ. 1.

Steubius (*d*), that the dropſy, upon which I was before with good reaſon doubtful (*e*), really was; I mean the dropſy of a virgin, whoſe belly having been tumid for ten years together; although it was moſt prominent on the left ſide; had not the marks of an aſcites join'd with it; but was even attended with a florid colour of the face: yet ſhe; being alſo very raſhly ſuppos'd to be affected with an aſcites, and, for that reaſon, thought a proper ſubject for the operation of paracenteſis; had no ſooner undergone the puncture, but too great a quantity of water was immediately drawn off, and ſudden death by that means brought on: yet, upon diſſection, appear'd a membranous ſac, wherein the water had been contain'd; being connected to no other parts but the ſpleen and the left kidney, wherewith it ſo firmly adher'd, as to have its veſſels in common with them.

Therefore, that I may refer you to other obſervations of dropſy in the ovaria, whereof you cannot doubt; let us come on to thoſe authors who have publiſh'd their obſervations ſince Ludovicus Salzmannus, according to our promiſe.

Abraham Vater (*f*) has deſcrib'd a woman, who could not; like the two of whom we ſpoke juſt now, and others (and amongſt theſe a widow, of whom I ſhall ſpeak preſently) who were falſly ſuſpected by the phyſicians, in the firſt year of their diſeaſe, to be pregnant; which circumſtance, in proportion as it delays the cure for a longer time, renders it more difficult in proportion; who could not, I ſay, be aſpers'd with a ſuſpicion of that kind, as not other perſons only, but ſhe alſo ſuppos'd herſelf to be pregnant by her own huſband: and her breaſts being now turgid with a fluid ſimilar to milk, ſhe affirm'd that ſhe could even, by the application of her hand, perceive the motions of the infant; motions which were well known to her, in that part, from the time that ſhe had borne, in the uterus, twins, whom ſhe brought forth by a very difficult birth: but as, after having a very vio ent fall, ſhe felt theſe motions no more, ſhe had no doubt, through the whole period of her life; and ſhe liv'd three years and a half; but the fœtus was dead: the tumour of her belly remaining very hard indeed, but not being ſo heavy at firſt; yet being after that encreas'd to a ſurpriſing degree, and become troubleſome.

In the belly of this woman, therefore, was a very large tumour, with a very great quantity of the moſt fœtid water: and this tumour did not belong to the uterus, which it had puſh'd down into the vagina by its weight, but entirely to the right ovarium; the whole of which had been chang'd into round capſulæ, fill'd with a viſcid and purulent liquor.

But this tumour is very far exceeded, by that which we may read of in the diſſertation of the celebrated Nicolaus Willus (*g*). For the abdomen having begun to ſwell, gradually, in a widow, at the ſame time that her ſtrength and appetite were quite entire; her habit of body not being cachectic, and her urine being naturally excreted; in the ſpace of five years it grew out into a very large bulk, but had an unequal appearance however;

(*d*) Diſſert. de infelici hydr. ſaccat. curat.
(*e*) Epiſt. 38. n. 63. in fin.
(*f*) Diſſert. inſcripta Graviditas Apparens.
(*g*) Diſſert. inſcripta Stupendus Abdom. Tumor, n. 5.

for

for it was moſt prominent on the right ſide; nor did it give any ſenſe of fluctuation when ſhe turn'd herſelf from ſide to ſide in her bed.

And, indeed, although, within the ſpace of ſome years, it was ſo encreas'd, as to hang down to the length of a ſpan below the knees, as the patient lay continually very high in the bed; though, at the ſame time, ſhe was a very tall woman; neither were her feet ſwell'd, nor her face much diſcolour'd, nor her appetite decreas'd: nor had ſhe any thirſt, except in the morning, and then only a ſlight one, nor any febrile pulſe; nor was ſhe diſturb'd with unquiet ſleep.

But the diſeaſe continuing after that, ſo long as to the twelfth year; and the abdomen being more ſwell'd; moſt of theſe circumſtances were at length chang'd: and, although from the tumefied and eroded feet, a great quantity of water diſtill'd, yet the tumour of the belly was not decreas'd thereby; and the feet being ſeiz'd with a gangrene, death came on in conſequence thereof.

No water was found in the belly, in the thorax, or the pericardium; the vaſt quantity thereof being entirely ſhut up within a membranous ſac. The coat of the ſac was double; the external coat being white, thick, and made up of tenacious fibres: the ſac had only one cavity and one origin; for the right ovarium had grown out into ſo ſurprizing an extent; the ſpermatic veſſels, which belong'd thereto, being twelve times thicker than they are wont to be naturally.

17. In the ſame diſſertation (*h*) alſo, you will find the marks collected whereby this dropſy is ſuppos'd to be known and diſtinguiſhable from others; particularly from thoſe of the uterus itſelf; and you will alſo ſee (*i*) how various it is found to be in various bodies.

And; in comparing all theſe caſes with other examples that I have produc'd heretofore, or at preſent; you will plainly perceive, what occurs more frequently, or more rarely, both in the living and the dead body: but if you attend to my caution, you will not, for that reaſon, take upon you to affirm any thing, for a certainty, in making a diagnoſis; and ſtill leſs promiſe any thing efficacious, from any method of cure whatever; and eſpecially from the chirurgical method.

For whatever ſome authors may aſſert in their writings; the learned author of the diſſertation himſelf, alſo, expreſsly confeſſes (*k*), "that no medical "practitioner whatever has hitherto been able to boaſt, that he had ab"ſolv'd himſelf of his engagements, after having promis'd to do a great "deal in this dropſy of the ovarium:" and although, where he ſpeaks of trying the operation of paracenteſis (*l*), he neither omits to mention the place where the puncture ſhould be applied; nor the manner of applying it; nor the method of cure, in particular, which muſt be follow'd, in order to make the parietes of the tumour coaleſce with each other; yet he firſt of all admoniſhes the phyſician and the ſurgeon, that they do not fail "previouſly to pronounce the event," of that method of cure, "to be "doubtful."

(*h*) n. 9. (*i*) n. 10. (*k*) n. 16. (*l*) n. 18.

For

For he particularly urges and inculcates this conſideration (*m*), that the ſigns are yet wanting, whereby we might determine; before that cure be undertaken; whether the water is collected within one cavity, or diſpers'd into many.

And you ſee, that; though it had even come into my mind(*n*), to conjecture this difference, from the fluctuation being ſenſible at one time, and not at another; this ground of conjecture muſt, nevertheleſs, be totally, and beyond a doubt, rejected, from conſidering the hiſtory of the widow laſt ſpoken of.

I omit other difficulties, which have either been ſufficiently obſerv'd already, or explain'd to you in other places: to which I would rather have you now add, thoſe that are drawn from the obſervations of the celebrated man George Chriſtian Brehmius (*o*), and Stephanus Weſzpremus (*p*); neither of which I have taken notice of before, becauſe the latter is without the ſigns of the diſeaſe, and the former complicated with the diſeaſes of many parts.

For what muſt the ſurgeon do, if, as the ſecond of theſe gentlemen did, he ſhould light on a large ſac, containing, together with a fœtid humour, a very conſiderable bony concretion; which ſac is ſhown to have belong'd to the left ovary, by a kind of ſmall rope, whereby it was connected thereto; though the greater part of this ovarium, together with the neighbouring tube, and the ligaments of the uterus, was putrified and lacerated; ſo that it was very natural to conceive, from whence the aſcites of this virgin had taken its origin? Or what muſt the ſurgeon do, if, after many ſigns of an encyſted dropſy, the trocar being plung'd, to a conſiderable depth, in the ſofteſt part of the tumour, a ſmall quantity of glutinous water, and a great number of hydatids, ſhould be diſcharg'd? for theſe were found, by Brehmius, in an almoſt incredible number after death: extending, together with a very thick ſchirrhous fleſh, each ovarium "to the ſize of two fiſts;" and even beſetting almoſt all the viſcera of the belly and the diaphragm in like manner.

18. It does not ſeem, therefore, that any other method of cure can be, with any degree of prudence, recommended in caſes of the encyſted dropſy, but that which I have already recommended (*q*); I mean, the palliative method.

For by theſe means, patients might have liv'd much longer very frequently, and labour'd under fewer and ſlighter inconveniences; and, indeed, after living many years in this manner, might, ſometimes, be cur'd by the aſſiſtance of accident and nature co-operating together.

See what happen'd to the virgin, the accurate deſcription of whoſe hiſtory we owe to the diligence of Villus (*r*).

For this virgin, having labour'd, for fourteen years together, under ſo great a bulk of belly, that, within the firſt eight years, her body weigh'd

(*m*) Ibid. & n. 16.
(*n*) Epiſt. 38. n. 64. in fin.
(*o*) Diſſert. de Hydatidib.
(*p*) Obſ. Med. 1.
(*q*) Epiſt. 38. n. 71.
(*r*) Diſſert. ad n. 16. ſupra cit. n. 6.

twice as much as before the diſeaſe began; that is to ſay, when ſhe was two-and-twenty years of age; ſhe at length fell down upon her belly; and a cracking noiſe being perceiv'd in the left epigaſtric region, ſimilar to that of the burſting of a drum (which circumſtance, and the beginning of the tumour from the ſame ſide of the pelvis, and even ſome ſigns which accompany dropſies of that kind whereof we ſpeak at preſent, ſhow'd that it was, beyond a doubt, to be referr'd to ſome one of theſe claſſes), ſhe began to diſcharge, at intervals, ſuch a vaſt quantity of inodorous water, by the urinary paſſages, that the tumour of the belly vaniſh'd away within nine days; and ſhe ſoon after recover'd her health, to ſuch a degree, that ſhe had now liv'd five years in very good health, when the hiſtory was written.

But an obſervation had been before publiſh'd, by the celebrated Chriſtopher Erneſtus Conus (*s*), of a matron, who, ſuppoſing herſelf to be pregnant at firſt, had ſpent the ſpace of five years with a tumid belly; but with a florid colour of the face, and an undeprav'd appetite; her ſleep being tranquil, and her reſpiration very free; having no tumour of the feet, and no diminution of the urinary diſcharges: but after that, her feet becoming tumid, and her belly being diſtended to the degree that will be mention'd preſently; and the diſorder having now continu'd ſeven years; it happen'd that ſhe fell down, and ſtruck her belly moſt violently, againſt a flinty pavement.

And ſoon after this, the ſame thing happen'd to her that happen'd to the virgin; I mean, ſhe now and then excreted urine of the ſame kind; and that in ſo large a quantity, that, by the help of a copious ſweat, which flow'd ſpontaneouſly at the ſame time, it was ſufficient to empty her belly; which, by this means, becoming rugous, and entirely collaps'd, was extended beyond her knees: ſhe therefore liv'd in good health for two years; till at length ſhe was carried off by a dyſentery of an epidemic kind.

To theſe two women therefore, an accidental fall was as happy, as it was unhappy to an equal number ſpoken of above (*t*).

And leſt you ſhould happen to ſuſpect, that, in the caſes of this virgin and matron, the water was diſcharg'd for this reaſon, that it was included in the cavity, not of the belly, but of the uterus; as in ſome patients ſpoken of by Cunradus (*u*), whoſe fall was happy likewiſe; you may take it for granted, that in the two women we have ſpoken of now, the water did not flow out from the uterus: as they did not diſcharge it in an involuntary manner, but could even reſtrain it at pleaſure.

19, But in regard to that dropſy of the uterus, which I ſpoke of juſt now, and of the tube of the uterus; there are certainly very few things to be pointed out and added to the Sepulchretum.

There is, indeed, one inſtance however, of a dropſy of the tube, and one that I have already made mention of to you (*x*); but in too brief and curſory a manner, as the book was not then in my hands: for it is, certainly, by no means a common inſtance; that is to ſay, it is an inſtance of the tube containing about a hundred and fifty pints of water, in a woman, who,

(*s*) Diſſert. inſcripta Caſus Hydropicæ lapſu ſanatæ.
(*t*) n. 16.
(*u*) Diſſert. de Hydr. Uteri c. 4. §. 3.
(*x*) Epiſt. 38. n. 66.

having

having been ſuppos'd, at firſt, to be pregnant, and, after that, to labour under an aſcites, died at length, and was diſſected by Abraham Cyprianus (*y*), who had not been willing to undertake the cure of the patient; and that certainly for very prudent reaſons too: for beſides water, he would have found, within the tube, many "carcinomatous tumours."

And you will have an inſtance of a dropſical uterus, from Brehmius (*z*), in a matron, who; being ſuppos'd, by a great number of phyſicians, to have labour'd under an encyſted dropſy, for the ſpace of two years; by means of an emenagogue medicine, which ſhe had taken, diſcharg'd cyſts from the uterus, to the number of ſeven; in one of which the ſkeleton of a fœtus was actually contain'd; and in the others a ſerum which ſmelt very diſagreeably; ſo that you might perceive the dropſy to have ariſen from an unhappy pregnancy, though it was contain'd within ſacs.

And you will find, in the hiſtory which you read in Cunradus (*a*), that a very great quantity of water was contain'd in one large bag, in a woman who complain'd of nothing elſe but a ſenſe of weight; her feet not being tumid; and ſhe having no ſenſe of fluctuation of water when ſhe mov'd her body; and what every one moſt of all wonder'd at, for about ſix years together; for ſo many years was it that ſhe labour'd under this tumour; ſhe was not only not emaciated, but was not even deficient in her menſtrua, which continu'd to have their regular diſcharge all the time.

Which circumſtance, and the diſſection likewiſe, may make you doubtful whether that bag was to be conſider'd as the uterus itſelf: for many of thoſe perſons who were preſent at the diſſection, ſuſpected ſome other body rather, which reſembled the uterus, and occupied the ſeat of it; and from thence the tumour had firſt begun, by the ſize of a man's fiſt; to be really the uterus.

But becauſe that verybody was ſchirrhous, and deprav'd by other diſorders; and did not communicate with the vagina, which was quite ſhut up beneath it; and the ſanguiferous veſſels, which crept through that bag, did communicate therewith; when you have read over all the circumſtances, and conſider'd them attentively, you will judge whether that bag is not, at leaſt, to be conſider'd as a diſtended part of the uterus; and, in the mean while, will conſider from the ſame diſſertation (*b*), the marks whereby it is ſaid that the hydrops uteri may be diſtinguiſh'd either from other ſpecies of dropſy, or from diſorders of the uterus itſelf; I mean, ſuch as ſchirrhus and cancer.

20. In regard to theſe laſt-mention'd diſeaſes, to my two obſervations, which I have already given you (*c*), you may join as many from thoſe celebrated men, Kieſlingius (*d*), and Roederer (*e*); and compare them with that

(*y*) Epiſt. hiſt. exhib. fœtus hum. poſt. 21. menſes &c.
(*z*) Diſſert. ſupra ad n. 17. cit. §. 2.
(*a*) Diſſert. ſupra ad n. 18. cit. c. 1. §. 14.
(*b*) c. 3. §. 3.
(*c*) Epiſt. 38. n. 34. & Epiſt. 39. n. 33.
(*d*) Diſſert. quæ inſcribitur Uterus poſt. part. inflamm. §. 13.
(*e*) Diſſert. de Uteri Scirrho n. 18.

ſtate of the ovaries alſo, of the tubes, and of the urinary bladder, which was found by me, and by both of theſe authors; or one of them; at that very time. For I do not here add any thing elſe on the uterus and bladder, or upon the other urinary and genital parts; as I ſhall write many things upon their diſorders in the following letters. Farewel.

LETTER the SIXTY-SIXTH

Treats chiefly of Diſorders that affect the Urinary Bladder.

1. AS I am about to write of diſeaſes, which relate to the urinary and genital parts; according to my promiſe in the preceding letter; I will firſt produce an obſervation, which relates to both one and the other claſs of organs; and afterwards I will give you ſome that relate to the former, and others that relate in particular to the latter: and theſe I ſhall communicate to you in this and the following letter, in the ſame method I am wont to purſue.

2. An old woman, who had already labour'd, for ſeven months, under pains in the lower part of the belly; particularly at the time of diſcharging her urine; had been in the hoſpital for the firſt months. She return'd home however from thence, but at length came back to the hoſpital again; being tortur'd with thoſe excruciating pains, and the urine, as often as ever it was diſcharg'd, depoſiting a great quantity of pus. Finally, being ſeiz'd with convulſions, ſhe died near the end of the year 1757.

As I had immediately order'd the inteſtines, at leaſt, to be taken out of the body, which I was not at leiſure to examine, till ſome days after death; I at length look'd carefully over all the organs that were created for the ſake of the urine, and for generation.

Betwixt the ovaries, which were white, ſchirrhous, and ſmall, was a ſmall uterus alſo, that was pretty ſound, both internally and externally; except that, externally, it had, on the back part of its fundus, a kind of round pimple, as it were, full of whitiſh ſerum.

But the vagina; from the orifice of which a very filthy matter was diſcharg'd; and the bladder alſo, being laid open; the whole internal ſurface of both of them appear'd to be eroded as it were, and cover'd with a cineritious, thick, and very fœtid pus: and if you attempted to remove this pus by the handle of the knife, the ſubſtance of both theſe corroded parts follow'd at the ſame time; ſo that it was manifeſt both of theſe organs had labour'd under a moſt filthy cancer.

And

And ſo great had been the purulent diſcharge, that the bladder; which, before it was cut into, ſeem'd to be half full of urine; appear'd to be ſo from the pus which it contain'd. However, although both the ureters were in a ſtate of conſiderable dilatation; and in particular the right; yet I could find no diſorder by cutting into, and examining, the kidnies.

3. I have produc'd this hiſtory, that you may compare it with others, which I have already pointed out (*a*): among theſe is mine alſo (*b*), which, though of a different nature in ſome things, is nevertheleſs ſimilar in this, that a violent diſorder had occupied the genital and urinary organs at the ſame time. We will now add other things, which relate to theſe laſt-mention'd parts in particular.

4. And firſt, when you read over again that letter, wherein; ſpeaking of the difficulty of making water, and particularly from calculi; I hinted a few things, in regard to waters, which are more or leſs apt to generate calculi (*c*); I would have you add the experiments, which were made, in conſiderable number, and with great accuracy; in the examination both of the waters of his own native place and others; by Vincent Menghini (*d*), who was lately ſnatch'd away, from his fellow-citizens at Bologna, by an untimely death, and that to their great grief and diſappointment.

For he even found amongſt well-waters, ſome which not only do not increaſe calculi, but diminiſh them; and quite diſſolve ſome. And the ſame water; being drunk by perſons affected with calculi, and made uſe of to prepare wines and broths; have prov'd their own efficacy, in this way, by the ſucceſsful event.

And with that needle, which was carried through the male urethra, into the bladder, and there encreas'd in its ſize, by the addition of a calculus, which had form'd itſelf thereupon; as I have deſcrib'd in the ſame letter (*e*); you may alſo compare that ear of wheat (for of an ear of barley you have read of in the ſame place (*f*)) which another man (*g*); when he was formerly in the country; and was there very much excruciated by the diſcharge of ſandy particles in his urine; had introduc'd into his urethra, in the room of a ſmall candle; but had not been able to draw back again, by reaſon of the reſiſtance that was given by the ſharp points, ſo as to occaſion the moſt ſevere pain; and had therefore left within the urethra: and this ear of wheat the lithotomiſt finally extracted from the bladder itſelf, in the form of a cluſter of grapes, which a ſtony matter had incruſted.

When you have compar'd theſe things; you will alſo compare thoſe remarks which I then made, that the great difference which there was betwixt my obſervation, and others of the like kind, might evidently appear.

5. But in regard to the obſtacle which is oppos'd to the diſcharge of the urine, by the growing out of the proſtate gland; you will remember that I

(*a*) Epiſt. 47. n. 26.
(*b*) Epiſt. 39. n. 33.
(*c*) Epiſt. 42. n. 17.
(*d*) Comment. de Bonon. Sc. Inſt. Tom. 4. in Opuſc. Obſ. Anat. 1.
(*e*) n. 28.
(*f*) n. 29.
(*g*) Hiſt. de l'Acad. R. de Sc. A. 1753.

have not only written on this ſubject, in the ſame letters, but in others alſo; and particularly in thoſe which had immediately preceded them (*b*).

But now we muſt add other things. For that tubercle, which I had ſometimes found in the very beginning of the urethra; and had conſider'd, at leaſt, as an incipient excreſcence of this gland; I have lately found to be conſider'd as a ſmall part, that is quite natural and common to all bodies, and is call'd *uvula* by a celebrated anatomiſt; whoſe name I do not omit to mention here, becauſe I do not eſteem his ingenuity, his diligence, and his other merits, as much as I ought to eſteem them, and as theſe very letters of mine ſhew that I do in more places than one; but only, in order that I may preſerve my uſual cuſtom, whenever I am oblig'd, by my love of truth, to diſſent from any learned and eminent man who is ſtill living; and eſpecially from any one who is a member of that famous ſociety, of which he is a member.

If therefore that *uvula* of his really exiſt in all bodies; for I will here make uſe of that word by way of brevity; it is with great reaſon that he wonders I have never ſeen it.

But I have much more reaſon to be ſurpris'd here, than when (*i*) I very plainly ſaw, in that part, a ſlightly protuberating line, which goes down to the ſeminal caruncle; and even another ſmall line, much more ſlender than the former, in this caruncle; which line, for inſtance, is the orifice of the ſinus contain'd within that caruncle; I nevertheleſs could not attain to the ſight of a body ſo much more protuberant, and comparable with the uvula: and not only then, when I firſt obſerv'd the little line of the caruncle; but neither before, nor ſince, when I attentively inſpected that part of the urethra in its natural ſtate; which I will not take upon me to ſay how many times I have done: this however I can affirm, that I had begun to do this before the beginning of the preſent century; and in how great a number of bodies, my friends at Bologna, and Venice, very well know: for in how many I have done it at Padua, every year, for theſe four-and-forty years paſt, either in the college, or in the hoſpital, all the ſtudents have been witneſſes.

What then is the ſtate of the argument? Do I call in queſtion what has happen'd to others? No. I only declare ingenuouſly what has happen'd to me.

For, that you may plainly perceive, how ſeldom I ſaw this; in ſo great a number of examinations that I have made; you may take it for granted, that all the obſervations of this kind, return to thoſe very few, which; having already written them to you, on former occaſions; I ſhall only take notice of now; or which, if I have never yet had an opportunity of writing, I ſhall here faithfully ſubjoin.

See therefore, how, in the ſhoemaker (*k*), I found a pyriform beginning of that uvula: for it was ſomewhat larger than the ſubjected ſeminal caruncle; whereas, in the body which had been affected with an aſcites (*l*), and in the ruſtic (*m*), in like manner, I met with it of a larger ſize; as it

(*b*) Epiſt. 41. n. 17. & ſeqq.
(*i*) Adverſ. Anat. I. n. 9.
(*k*) Epiſt. 37. n. 30. in fin.
(*l*) Epiſt. 41. n. 18.
(*m*) Epiſt. 43. n. 24.

equall'd that of a ſmall grape; and ſomewhat larger in a man, whoſe hiſtory I ſhall immediately deſcribe to you for that one reaſon only.

6. A man; who was very near ſixty years of age, of a muſcular habit, and tall in ſtature; had died in the hoſpital, of a ſuppurated inflammation of the thorax; and that on the fifteenth day of the diſeaſe. None of the viſcera therefore, but the viſcera of the belly, were brought to me from this body; at the time of my beginning to teach anatomy in the college, before the end of January, in the year 1755. And in theſe viſcera I only obſerv'd the following preternatural appearances.

In the ſtomach, from the ring of the pylorus, a roundiſh excreſcence was prominent; which, internally and externally, was of the ſame colour with that ring of the ſubſtance whereof it was compos'd.

In the meſentery, were very few glands indeed; but theſe were larger, than were proportion'd to that age. The ſpleen was rather ſmall, and internally almoſt in a liquid ſtate. The large artery had begun to ſhew whitiſh ſpots on its internal ſurface; which ſpots would, afterwards, have degenerated into bone.

And finally, the urinary bladder, having been diſtended with a ſufficient quantity of introduc'd air, appear'd to be ſmall, if you compar'd it with the ſtature of the man; and with the greater part of the abdominal viſcera.

When open'd, however, it did not ſeem to have very thick coats, nor any other diſorder; except that, from the poſterior part of the orifice, a body of the ſhape, and magnitude, of a ſmall cherry, was prominent within it: and the more this deſcended through the beginning of the ſubjected urethra, the more and more was it extenuated; ſo that it did not reach to the ſeminal caruncle.

Externally it was ſmooth: white both externally and internally; and ſo evidently a continuation of the proſtate gland, and ſimilar thereto, in the other part of its ſubſtance, that you would not doubt but it muſt have grown out from thence.

7. Now if you compare this fourth, and thoſe other three deſcriptions of mine, which I referr'd to before (*n*), of this excreſcence, with the deſcription of that uvula whereof I am ſpeaking; it will be very eaſy for you to ſee, that I had ſeen the ſame things, whether this corpuſcle was ſmall, or become much enlarg'd.

Why then, if it were in all perſons, I ſhould not have ſeen it in other almoſt innumerable bodies; in which I had, down to that very time, inſpected theſe parts with equal attention, as my cuſtom is; I can by no means conceive.

But perhaps you will ſay, take care leſt your memory deceive you; for I think, I remember to have ſeen you take notice of excreſcences in thoſe parts, in ſome other bodies alſo, in your writings. And indeed I had ſeen excreſcences about thoſe parts, and even in thoſe very parts; but not excreſcences of this kind.

For that which I have deſcrib'd in Cortini(*o*), was about thoſe parts indeed; but at the ſide, and not from the ſubſtance, of the proſtate: being produc'd

(*n*) N. 5. in fin. (*o*) Epiſt. 42. n. 13.

from

from the ſubſtance of the bladder. And as to that which I have taken notice of, in the firſt of the Anatomical Epiſtles (*p*), in a certain old man, whoſe body I examin'd twelve years after the other; this was indeed found at the beginning of the urethra, ſo as to ſtop up, in ſome meaſure, the orifice of the bladder: but it was fleſhy, unequal, flaccid, and reddiſh.

And that which I have deſcrib'd to you, from the body of a certain man who died ſuddenly (*q*), in its form, ſituation, ſubſtance, and origin, perfectly agreed with that we are ſpeaking of here; but differ'd from it in this, that it was double; and not ſingle only.

Yet that double excreſcence, which you have read of, as being found by me, in a woman (*r*), was ſtill more different; as it was not only made up of two excreſcences, ſo disjoin'd from each other, that one of them was prominent from each ſide of the orifice of the bladder, within its cavity; being equal in ſize to the point of a man's thumb; but theſe bodies were moreover of an irregular figure: as to other circumſtances, both of them were white, and produc'd from the ſurrounding corpus glandoſum urethræ, which very body was white alſo here, hard, and become thick.

For, although I will not ſay, that this body performs the ſame offices, in general, with the proſtate; I ſhall not deny, nevertheleſs, but it correſponds to it in ſome of them.

And this I was willing to add, becauſe I ſee that this uvula is ſuppos'd to exiſt in women alſo, yet to be leſs prominent than in men; although it has not yet ever happen'd to me, to find an excreſcence of this kind in females, in the ſame ſituation as in males; either in a ſmaller or a larger degree.

And leſt you ſhould ſuſpect, that if I had read thoſe things, which have been juſt now ſaid of this uvula, before I very attentively examin'd the upper part of the urethra, ſo frequently, in both ſexes, I ſhould probably have been more ready to acknowledge theſe appearances, both in men and women; I will faithfully communicate to you all the diſſections which I was capable of making in the very ſhort time ſince I have read thoſe things; notwithſtanding they contain nothing beſides this circumſtance, that relates to our preſent purpoſe: and I will begin with that of a woman.

8. The urinary and genital parts of a woman; who died in this hoſpital, of I know not what diſorder; were brought into the college, where I was teaching anatomy, before the end of January in the preſent year 1759.

In the genitals I obſerv'd nothing that was preternatural, beſides one or two roundiſh prominences; both of which were ſmall, and protuberated, in ſome meaſure, on the internal, and poſterior, ſurface of the fundus uteri; being of the ſame kind, that you will remember to have been deſcrib'd by me, at other times, of a larger or leſſer magnitude.

But as to what relates to the urinary parts; beſides the emulgent artery which is common to all, another artery, which has been ſeen by me in ſome bodies, and by many other anatomiſts, went off, in like manner, from the trunk of the great artery to the kidney.

(*p*) N. 43.
(*q*) Epiſt. 42. n. 11. in fin.
(*r*) Epiſt. 39. n. 33.

But

But this was only a leſs uſual appearance of nature: yet the trunk itſelf of the aorta had this preternatural circumſtance, that it ſhew'd white ſpots internally of a conſiderable ſize; which were the marks of future oſſification: and not only this, but that it was more narrow in its diameter, than ſeem'd ſuitable even to a woman of a low ſtature.

The bladder, being ſound, had no prominence at the lower part, and none at the upper part, of the urethra, in like manner; and even not any the leaſt trace of a prominence.

9. The body of an old man; of ſixty years of age, as it appear'd to be; was diſſected at the ſame time and in the ſame place. In regard to which man, I could learn nothing more than this; that before he begg'd for his living at Padua, he was on board the gallies; having been condemn'd, probably, on account of ſome quarrels. At leaſt many ſcars of wounds which he had receiv'd, appear'd in the abdomen and the neighbouring parts.

The belly, and the thorax, being cut into, it was found that none of thoſe wounds, but one, had penetrated into their cavity: this one, however, had gone no farther than the omentum, as a ſmall part of this membrane adher'd, in a ſtate of agglutination, within an elliptical little cavity of the peritonæum, which had formerly been perforated; at the ſame time that the viſcera beneath were unhurt.

The ſtomach; which was almoſt empty, and yet larger than uſual; ſhew'd a ſlight phlogoſis internally, towards the œſophagus: and the ſmall inteſtines, externally, ſhew'd a colour which was partly yellow, but degenerating into brown; and the cyſtic bile was yellow, but dilute, and almoſt effete.

The hollow ſurface of the liver, on the right ſide, was diſfigur'd by a very black ſpot: the figure of which ſpots approach'd, in ſome meaſure, to the area of a circle; the diameter whereof did not exceed the breadth of a man's thumb. As ſome fluid ſeem'd to lie beneath, I cut into the coat of the liver, and found it to be ſemi-coagulated blood, comprehended in a not very deep cavity.

The internal ſurface of the great artery had ſome bony particles ſcatter'd up and down; but they were ſmall, and not in great number. Among theſe; to ſay ſomething of the parts of the thorax alſo; that was certainly one of the largeſt which lay upon the very orifice, in which, the canalis arterioſus, that had formerly been open in the fœtus, terminated.

The heart was large: and the mouth of the coronary vein had nothing elſe, in the place of a valve, but a ſlender filament, produc'd from the upper edge of the orifice to the lower. And this I have related here; as I have other things alſo; that you might perceive I had made an accurate obſervation, even of little things, in this body.

With how much more accuracy do you ſuppoſe, then, that the uvula was enquir'd after, by me, in the orifice of the bladder of this man, and another to whom I ſhall refer preſently? and of that old woman who was ſpoken of juſt now? eſpecially as in this man, when the bladder was already open'd, ſomething, that was of a roundiſh figure, and moderately prominent, ſeem'd to protuberate within the neighbouring part of the urethra, which was not yet open'd.

But nevertheleſs, when the urethra was at length laid open, it immediately

appear'd that I had been deceiv'd; and not only I, but all the more diligent ſtudents who were preſent; together with the experienc'd diſſectors: ſince theſe obſervations I made in public, according to my general cuſtom.

For, whatever the cauſe of the deception might be; certainly there was not the leaſt prominence; that we could now attain to the ſight of; in that whole ſpace, which lies betwixt the bladder and the ſeminal caruncle.

10. But becauſe I am ſo deſirous of learning truth, as to think that whatever I hear, or read, of the ſtructure of the body, that is new, I ſhould enquire after, even in thoſe parts wherein I remember to have ſeen nothing of this kind, though they have been carefully examin'd by me a hundred times; I wiſh to inſpect them again and again, to the great, though ſilent, admiration, and perhaps irkſomeneſs, of thoſe perſons who aſſiſt me: for which reaſon, it gave me a very ſingular pleaſure, that an opportunity offer'd itſelf, in thoſe very days, of cutting into and examining a third bladder.

I therefore begg'd, that not only the viſcera of the thorax; of that man whoſe hiſtory I have written to you, in the latter part of the ſixty-fourth letter (*s*); wherein the ſeat of the diſorder was, might be brought to me, but alſo the organs ſerving for the offices of generation.

As the bladder therefore, and the urethra, when open'd, ſeem'd to me to be ſufficiently proper, wherein to make an attentive enquiry after that prominence; I made this enquiry very accurately; but in vain: for not the leaſt appearance of it was found.

Nay, and even when human bodies were wanting; that is, after the anatomical demonſtrations were finiſh'd; I was determin'd to enquire after it in a dog of a conſiderable ſize.

This animal I had order'd to be cut open alive, in the college, after the cuſtom of my anceſtors; not only for other reaſons, but, moreover, that it might appear, whether no interſtice be left betwixt the pericardium and the heart, either in its ſyſtole, or in its diaſtole; as I had read not long before; but the pericardinm ſo exactly embraces, at all times, whatever it contains; or at leaſt in living and healthy bodies; that no vacuity remains within its cavity.

For as this method of determining it was an obvious one, ſo it ſeem'd not to be liable to doubt; I mean, if the thorax of the dog being open'd; in ſuch a manner, that not much blood was extravaſated; we immediately tried, while the heart ſtill exercis'd its motions ſtrongly, whether the membrane of the pericardium, before it was open'd, were ſo cloſely contiguous to the heart, that it could be by no means, or at leaſt not eaſily, laid hold of and rais'd up betwixt two fingers.

And this it could be very eaſily, as was tried by ſeveral perſons, and ſeen by all: and I know that the ſame experiment was ſince made, upon other dogs, with the ſame ſucceſs. In that dog therefore, after having ſought in vain, as I had often done before, whether the veſiculæ ſeminales are not wanting; but as ſome ſeem to believe, are leſs conſpicuous; I ſought after this uvula to no purpoſe in like manner.

For the bladder, and the urethra, being open'd, as I ſaw no eminence in

(*s*) N. 19.

the

the firſt, beſides thoſe two round bodies, which, deſcending from the ureters, came together at length at an angle; ſo I ſaw that there was no prominence, from this angle quite to the ſeminal caruncle; but that line into which thoſe bodies were produc'd, and which was not only much narrower, but much more depreſs'd than they.

I found, I ſay, nothing protuberating; nor did I find that triangle in the bladder (as I ſee it is call'd); of which, what I obſerv'd before, not to ſay afterwards, in human bodies; and what it ſeems to me that we ought to think on this ſubject; and of other things of this kind; ſince it is not a proper place to ſay much here; let us immediately return to the uvula, of which I was here under a neceſſity of ſpeaking.

For I do not doubt, but you are convinc'd, that it is with juſtice it has been conſider'd by me, as a morbid excreſcence of the proſtate gland; from thoſe things which have either not occurr'd to me, for the moſt part, in human bodies, or have occurr'd ſometimes only.

11. Nor will you find that it has been conſider'd in any different light by others; and particularly by Valſalva and Pohlius; from thoſe things which I have already communicated to you in the forty-firſt (*t*), and forty-ſecond letter (*u*), that I have ſent to you.

For when one of theſe appearances was ſeen by each of them, as ariſing from the ſame part, in the proſtate gland of an old man; the one reſembling a pear, and the other a cherry; of the ſame forms, that is to ſay, which it was ſeen by me to have in that ſhoemaker, of whom I have ſpoken elſewhere (*x*), and in the man whom I have ſpoken of above (*y*); neither Valſalva nor Pohlius conſider'd it as any certain natural part of the proſtate gland, which was accidentally become enlarg'd; but as an excreſcence altogether, as it was: or as a preternatural tumour. And indeed, how far the proſtate gland is liable to excreſcences, which raiſe themſelves up from its ſuperior circumference, or all round, or from a certain part, into the cavity of the bladder; it would be very eaſy for me to ſhew, if I were diſpos'd to repeat, on this occaſion, what I have ſaid on a former (*).

It will be better for you to read it over again: and although there is much on this ſubject, you will ſtill find that there are other things which may be added, in order to be referr'd to the Sepulchretum; as, for inſtance, that example of the celebrated Fantonus (*z*): an example, that is to ſay, of an old man of ſixty, who, having died, after a very long-continu'd, and troubleſome ſtillicidium of urine, had the proſtate not only purulent, hard, and immoderately tumid, but "produc'd far and wide, towards the lower "part of the bladder alſo: the capacity of the bladder was very ſmall: and "the membranes very thick:" which circumſtance you will add to thoſe I have written of to you before (*a*).

Do not be ſurpriz'd, that there was no ſuppreſſion of urine; but only a very troubleſome ſtillicidium thereof: for, even in the caſe of Pohlius, only

(*t*) N. 6. (*u*) N. 37.
(*x*) Epiſt. 37. n. 30.
(*y*) N. 6.
(*) Epiſt. 41. n. 17. & 19.
(*z*) De Obſ. Med. & Anat. Epiſt. 8. n. 18.
(*a*) Epiſt. 42. n. 33. & 35.

more frequent ſtimuli to make water; whereto were added, at ſtated times, a dyſuria and ſtranguria; are made mention of: and in that phyſician referr'd to by me, from Valliſneri, in the forty-firſt letter (*b*); although the excreſcence, which aſcended, from the ſubſtance of the proſtate, within the bladder, was equal to the magnitude of a walnut; to the ſuppreſſion of urine, nevertheleſs, a ſtillicidium thereof only ſucceeded, join'd with excruciating pains of the urethra, and a teneſmus: nor in regard to the woman, and of the man; whoſe excreſcences of the ſame kind I have taken notice of above (*c*); have I heard any-thing in relation thereto; except that ſhe was affected with a continual ſtillicidium of urine, and that he was ſometimes heard to complain of an acrimony therein: and I ſaw the bladder, in each of their bodies, to be diſtended with urine; as it was in that phyſician likewiſe.

It therefore appears, that, according to the various diſpoſition of circumſtances, a different inconvenience is brought on by different cauſes; and that, as theſe circumſtances are almoſt infinitely variable, a greater or leſs impediment is thrown in the way of the egreſs of the urine, by excreſcences of the proſtate gland.

12. And I am very well pleas'd to find, that three obſervations; which I read in the ſame place where I ſee that this uvula, of which the queſtion is at preſent, is propos'd; agree with what I juſt now ſaid.

For this uvula, having been found, in three bodies, of the thickneſs of a ſmall nut, (perhaps of a filbert) the firſt had labour'd under a very troubleſome difficulty of urine, with frequent ſtimuli to make water; the ſecond, for eight days, under an iſchuria; of which they were cur'd by the catheter; and the third, under one or the other of theſe complaints; for which of them it had been was not known; and the bladder of all of them was found to be very full of urine.

But in this we differ, that in them the uvula is ſuppos'd to have been encreas'd; whereas I am perſuaded, by my obſervations, that an excreſcence, quite of a preternatural kind, had protuberated from the proſtate gland; without ſuppoſing any uvula naturally to have exiſted.

And my obſervations are aſſiſted by this circumſtance; which I have alſo obſerv'd heretofore (*d*), and have even confirm'd in this letter; that none of the appearances of this kind, which I remember to have ſeen or read of before, were in young bodies, but all in old men: that is to ſay, in bodies which every one knows, down from the time of Hippocrates (*e*) to the preſent, are more liable to diſorders, and, in particular, to "ſtillicidia and difficulties of urine."

Nor is that other remark; which you have read of, as being made by me at the ſame time; any objection to my opinion; I mean, that theſe excreſcences are wont to be from that part of the proſtate, through which the protuberating line is drawn: for it is very eaſy for a line, already ſomewhat protuberant, to become more tumid; and it is ſhewn, in the ſame place, that excreſcences of the proſtate do not begin from that part alone.

(*b*) N. 17, & 19. (*c*) N. 7. (*e*) S. 3. Aph. 31.
(*d*) Epiſt. 41. n. 19.

And

And we diſagree no leſs in this particular; I mean, that this uvula, by growing out, is the ſeat of a very frequent, but very unknown diſeaſe.

It is not rare, I confeſs; but yet it is not ſo frequent, that; although out of theſe three patients, the ſecond, who was a very old man, was treated, by the phyſicians, in the ſame manner as if he labour'd under a paralyſis of the bladder; to which cauſe, without doubt, that diſorder ſo common to old men is attributed; it therefore follows, that it is not frequently to be attributed to paralyſis alſo; or at leaſt to the ſtate of the expulſive powers of the bladder being weaken'd through age: and indeed if this hitherto unknown cauſe, as it is ſuppos'd to be, were very frequent; there would be great reaſon to wonder how it ſhould happen, that among thoſe ſixty or ſeventy bladders, which were examin'd, no more than theſe three had been found to have this cauſe exiſting in them.

But how this cauſe can be ſaid to be hitherto quite unknown, I confeſs I am at a loſs to conceive: nor do I ſay this only on account of thoſe very many examples, which I have referr'd to (*f*) already, as made public by others; but for this reaſon chiefly, that ſuch an aſſertion is made, where theſe very words of Santorini (*g*) are ſoon after quoted: "The orifice of "the bladder, whereto is prefix'd a ſomewhat prominent body, which" is ſometimes ſo very prominent in diſeas'd bladders, "as entirely to intercept "the paſſage of the urine."

And indeed in the figure; for the ſake of explaining which, Santorini had written theſe things; the triangle and the uvula are ſaid to be well expreſs'd (both of them, therefore, before theſe laſt ſix-and-thirty years); but why, I pray, is not the ſame thing ſaid of the diſeaſe; the cauſe of which, he has in the ſame place, as you ſee, expreſsly aſſerted the uvula to be?

Nay verily; as if he, who had made this aſſertion, had not in the leaſt obſerv'd thoſe things which he explain'd; it is doubted whether we do not rather owe theſe appearances to the limner, who faithfully expreſs'd what he ſaw: and that ſo much the more, becauſe, in the book of Santorini; on account of which, that figure, as well as the others, is added; the deſcription of this uvula is ſought for in vain; and becauſe of the triangle there is not even a ſingle word, in the very article which correſponds to that figure.

But as you, when you examine the book of Santorini, will not doubt but the tenth chapter correſponds to that figure; as it is entitled *De Virorum Naturalibus*; ſo you will alſo find that this very figure is often referr'd to there in the margin: and thoſe little parts, whereof the queſtion is at preſent, are at length twice ſpoken of (*b*).

And in the firſt place in the following manner: "Although I have now "and then ſeen ſomething poſterior, of which I ſhall ſpeak preſently, pro-"tuberate, into a conſiderable bulk, at the orifice of the neck of the blad-"der; it is either very rarely met with, or we have obſerv'd it to be ſo far "protuberant, in thoſe ſubjects only, whoſe bladder was affected with

(*f*) Epiſt. 41. n. 12. 17. 19. ad I.
(*g*) Obſ. Anat. in Explic. Tab. 2. Fig. 2. (*b*) §. 20. & 22.

"diſeaſe:

" diſeaſe: ſo that this circumſtance, which is diſeas'd and unfrequent, does " not deſerve to be exhibited as perpetual and conſtant, to the great detri- " ment and miſleading of younger practitioners; or thoſe who have had " but little experience."

And in the ſecond place the words run thus: " But that which is ſome- " times ſo prominent, at the orifice of the cervix veſicæ, as to be capable " of intercepting, in ſome degree, the paſſage of the urine, is cover'd over " by the thin internal membrane of the bladder, in ſuch a manner, that I " have ſometimes ſeen it made up of conſpicuous and aggregated glands: " and I remember to have ſeen the wide circumference of this body, round " about, occupied by protuberating glands; though of a ſmall ſize; in an " old man, within whoſe bladder above ſix-and-thirty calculi, of a white " colour inclining to yellow, were contain'd; ſome of which calculi, being " not much leſs than a filbert, were ſhut up in ſacculi conſtructed of the very " ſtrong and divided faſciculi of the ſame bladder."

It therefore appears, what Santorini thought of the uvula, and of the triangle alſo; for he ſeems to have ſpoken of both at the ſame time; although my opinion, in regard to ſome things there propos'd by him, is different from his: however, I conſider nothing here, but that the diſeaſe, which is ſometimes to be aſcrib'd to this excreſcence, was not unknown even to him.

13. But in regard to the very ſmall glands of the bladder; what I have ſeen, and what I think of them, has been ſaid by me on a former occaſion (*i*). And as to thoſe ſacculi, or, as I have call'd them, veſical herniæ, obſerv'd by me in the ſpaces which the faſciculated fibres of the bladder ſurround; in conſequence of the coats giving way to the preſſure of the urine, which is ſometimes retain'd in too large a quantity; it has been ſufficiently declar'd by me, in the forty-ſecond letter (*k*), how long ago I publiſh'd theſe things, and in what work; in which letter I alſo ſaid much upon the ſubject of calculi included in theſe ſacculi; and of the deceptions which may ariſe from thence to lithotomiſts.

And for this very reaſon, I take notice of theſe, and the following things, to you; I mean, becauſe I am under a neceſſity of adding, if not many things, at leaſt not very few, as well in regard to that uvula, as in regard to other matters, which I have ſometimes advanc'd, when writing to you, or to others; things which I am compell'd by a love of truth to remark, when I conſider what I have lately read of this uvula, and of the bladder; and what I had formerly read of this laſt-mention'd part; not only in the greater number of anatomical writers, but particularly in an author who was to be preferr'd before many, I mean my friend Santorini, in that very tenth chapter which I juſt now quoted.

Attending therefore to his deſcriptions and figures, and the deſcriptions and figures given by others, of the fleſhy fibres of the bladder, and comparing them with what I had been able to ſee (*l*) in the laſt months of the year 1725, and the firſt months of the following year; I thought I might

(*i*) Epiſt. Anat. 1. n. 63.
(*k*) n. 30. & ſeqq.
(*l*) Epiſt. Anat. 1. n. 60.

make

make this concluſion in particular: that there is ſo great a variety in the diſpoſition of thoſe fibres, as to make it impoſſible to reduce them to any one certain and conſtant deſcription.

I was not greatly ſurpriz'd therefore, when I lit on the varying figures of others; as, for inſtance, of that eminent man William Rutty (*m*); or when I found the illuſtrious profeſſor of anatomy, Albinus (*n*), admoniſhing us, in reſpect to that muſcle of the bladder; which he gives a figure of as riſing from the oſſa pubis, and extending itſelf through the lower part of the bladder, almoſt tranſverſely, and continuing itſelf to the reſt of the fibres thereof; that it had been "very ſeldom" ſeen by him.

Nor did I wonder, when in the year, if I remember rightly, 1731, I read the deſcription of Joh. Wilhelmus Albrecht (*o*), the whole of which I muſt copy to you here; not only on account of the variety, but for this reaſon alſo, that he has propos'd it, contrary to the opinion and cuſtom of other anatomiſts.

"In the urinary bladder of a robuſt man," by the anatomical pipe of Wolfius, "we ſeparated ſix very diſtinct coats, which are commonly con-
"ſider'd, by authors, as a triple membrane. But as to that which is call'd
"the muſcular coat; I do not ſee with what propriety it can be number'd
"amongſt the coats. For the muſcular fibres do not coaleſce into one
"continu'd membrane; but, being collected on one ſide and on the other,
"like fillets of an inch in breadth, or even not ſo broad, go round the
"bladder, meet one another without any order, and, cutting one another
"at different angles, are terminated in membranes, either about the neck,
"or about the ſphincter itſelf."

I, however, do not believe that any one author; who has enquir'd into the fleſhy fibres of the bladder, more than once, in a proper manner; has fail'd to ſee the interſtices which they leave betwixt one another: and I, therefore, ſuppoſe that this author, or any others of the ſame claſs; if they happen'd to be aſk'd, whether theſe fibres, which are ſo entangled one with another, as to comprehend betwixt them *areas*; under which name I have ſpoken of theſe interſtices in the Adverſaria (*p*); whether theſe fibres, I ſay, could with propriety be call'd by the name of a reticular muſcle; would no leſs readily affirm it of theſe fibres, than of thoſe of the detruſor urinæ muſcle; nor with leſs readineſs than they have call'd that membrane of the bladder muſcular, by reaſon of theſe fibres; which membrane had theſe fibres lying upon, or interwoven with, itſelf, and join'd them together by its inter-texture.

You ſee then, in what ſenſe I have alſo, in conjunction with others, call'd this membrane, or coat, fleſhy or muſcular; I ſay, in conjunction with others.

For although he, whoſe loſs we lately lamented, I mean the celebrated Fantonus (*q*), ſaid, twenty years before Albrecht, the following things upon the ſubject of theſe fibres, and upon this membrane of the bladder: "Theſe

(*m*) Treatiſe on the Urinary Paſſages. Tab. 12. Fig. 41.
(*n*) Tab. Sceleti, & Muſc. corp. hum. Tab.
(*o*) Obſervat. Anat. §. 5.
(*p*) III. Animad. 36.
(*q*) Anat. corp. hum. Differt. 7.

fibres,

" fibres, however, do by no means form a compleat membrane; for when " the bladder is extended, they are found to be very much drawn aſunder " from each other;" yet he did not deny but the coat, which was not made complete by theſe fibres, was completed by the membrane that lies betwixt them.

And moreover, although he immediately added the following words: " And hence it happens that the urine muſt, of courſe, flow out through the " interſtices of thoſe fibres, at any time when the internal membrane is " eroded, if the external membrane did not, by its denſity, reſiſt this " eſcape;" I, however, do not think that we muſt, of courſe, underſtand them ſo as to ſuppoſe, that he did not hold theſe intervals to be fill'd by a thin membrane, at leaſt, if not by a denſe and firm one; eſpecially as he has aſſerted, " that the bladder is nevertheleſs compos'd of three coats, " the external of which is made up of the peritonæum, the middle is fleſhy, " and the inner coat a nervous one, being made up of white fibres very " denſely woven together."

14. Yet there is no membrane, or coat, you will ſay, in thoſe interſtices. But tell me, I beg of you, do you think that, if there were none, this would not have been found out, and acknowledg'd, among the excellent anatomiſts of former days? Euſtachius was certainly very eminent and ſkilful among them; if any other was; and yet that he had obſerv'd theſe interſtices, appears very evidently from that figure, ſuch as it is, which you ſee exhibited under number ſeven, in his twelfth table.

Did he, therefore, think you, exclude this membrane we are ſpeaking of, from among the number of coats of the bladder? No truly, but has even aſſerted the very contrary, in the following words (*r*): " The proper " coat of the bladder is double, and the external" (which is what we are ſpeaking of here) " has very conſpicuous, thick, and almoſt fleſhy fibres, " which are diſtributed ſo variouſly in every direction, that to thoſe who " look upon them, they ſeem to have the appearance of many coats."

But you will perhaps ſay, he, like the reſt of the ancients, did not diſtinguiſh a cellular web from a membrane.

To this I will not reply, that the cuſtom of theſe authors was to conſider parts, rather as they are found, naturally, in the human body; than to enquire into what they may be reſolv'd, when you drive in the air forcibly; as Albrecht did; or water, as others have done; that is to ſay, they enquir'd of what ſtructure they were from the hand of nature herſelf, and for what purpoſe they were form'd in the manner they naturally occur; and not to what ſtate they may be reduc'd by artifice.

It is ſufficient for me to ſay, that Winſlow; the very eminent anatomiſt of theſe times (*s*); though he very well knew that the fleſhy fibres of the bladder were connected to one another by a cellular texture; and might therefore be ſeparated from each other by the introduction of air artificially; has nevertheleſs enumerated this muſcular membrane, among the other coats of the bladder: being very well aware, that if, becauſe membranes, and many other parts, can be reſolv'd, by the ſame artifice, into a more or

(*r*) Tract. de Renibus. c. 19. (*s*) Expoſ. Anat. tr. du bas Ventre n. 451.

leſs

leſs evident cellular texture, they ought to be call'd by a name very different from what they have been accuſtom'd to bear; a much greater confuſion would be introduc'd into the anatomical ſchools thereby, than ever it could adminiſter utility.

I confeſs that, if the queſtion were now of impoſing names upon parts, in the manner of the firſt fathers of this ſcience, or of thoſe who formerly encreas'd it, and further'd its progreſs; it is not to be doubted, but many better names, than the preſent, might be thought of; and ſuch as would be better accommodated to the parts that bear them. But it is better, in my opinion, to teach the truth which has been ſince obſerv'd, and to retain the ancient and uſual appellations.

Thus, I by no means omit to teach, on proper occaſions, what membrane, of what a nature, and how variouſly divided at the lower part, is ſubjected to the venous orifices of the heart; but, although I very much approve of names lately impos'd thereon, by the moſt ingenious men, I nevertheleſs ſtill go on to make uſe of the uſual terms of valvulæ tricuſpides and mitrales; and continue to ſay right and left ventricle of the heart, the more willingly, becauſe ſome of them expreſsly allow, that when they had choſen rather to ſpeak of theſe parts, under other new names, they were not underſtood, even by very learned auditors.

But as I hope that, if I am not prais'd for this my intention, I ſhall, at leaſt, be pardon'd for it; ſo I alſo hope, that if I ſhould ſtill preſume, as you have ſeen me do, to number the proſtate in the claſs of glands, I ſhall be pardon'd in like manner; becauſe every one knows, that not only other perſons, but even thoſe who had declar'd war againſt glands in general, have done it, and ſtill do it.

For though they, without doubt, knew very well, that not all the parts of the proſtate could be fit for the ſecretion and preſervation of the humour peculiar thereto; yet they knew, at the ſame time, "that almoſt the whole "proſtate was made up" of the glandular tubuli of this body; to uſe the words of Santorini; who has not only deſcrib'd that in the ſame chapter which I have quoted above (*t*), but has alſo deſcrib'd the levator muſcle of this gland, the ligament, and the capſula (*u*).

And in proportion as the tubuli are in greater number and thicker, ſo much the more does it appear, that the proſtate ought to be retain'd among the number of the glands; and a certain opinion of mine is confirm'd, in regard to the cauſe why the extremities of the ſeminal veſſels, and the thinner part of them, is carried through that gland; I mean, that while theſe tubuli are depleted by venery, the continual compreſſion of thoſe veſſels may be, at the ſame time, remitted, and the included ſemen may be thrown out.

15. But to return to the diſeaſes of the urinary parts; when I lately read thoſe things which laid me under a neceſſity of interſperſing theſe remarks, in behalf of myſelf and others, who think and ſpeak in the ſame manner; I alſo lit on that paſſage where the ſymptoms of a certain iſchuria are propos'd; and an iſchuria which is ſaid to be very frequent; being of a middle

(*t*) 10. § 22. (*u*) § 5. 17. 20.

nature betwixt the renal and the veſical: that is to ſay, having its ſeat in the ureters, which are dilated to an extreme degree by the urine, that cannot flow down into the bladder, by reaſon of their violent ſtrangulation at the point of inſertion.

And theſe are the ſymptoms which are produc'd: a dull pain join'd with the iſchuria, and a certain ſenſe of weight in the loins, nearer to the bladder than to the kidnies.

There are extant indeed, as you very well know, many examples of dilatation in the ureters; from different cauſes which conſtringe them at their inſertion, or even ſtop up their orifices.

But if theſe cauſes continue ſo long, that the urine muſt, of courſe, dilate them in an extreme manner; it muſt happen, long before this be the caſe, that the urine which is continually ſecreted, will fill up the very ſmall paſſages within the kidnies, in ſuch a manner as to apply violence thereto; and, by preſſing upon them, prevent the ſecretion which is there made: and this in ſo ſpeedy a manner, that there can ſcarcely be time to obſerve the ſigns of this iſchuria media, disjoin'd from thoſe of the renal iſchuria, of this kind, which obſcure them: or if we have opportunity of obſerving the ſigns of this iſchuria media, either before or after; certainly, if they will be nearer to the bladder than to the kidnies, they will, of courſe, be perceiv'd, not in the loins, which the kidnies themſelves occupy, but below the loins.

Other things, however; to ſay nothing of thoſe, which are advanc'd from conjecture, not from obſervation; I purpoſely omit; that I may, rather, among many things which I ingenuouſly commend, praiſe one, from whence a certain new cauſe may be taken, and number'd among the cauſes, not only of an incontinence of urine, but of a veſical iſchuria, as far as they relate to the ſphincter.

You are not ignorant how many and various things have been hitherto ſaid of the ſphincter veſicæ, on account of which, and my own obſervations alſo; that have been made ſome at one time, and ſome at another; I have been under a neceſſity of thinking differently of it at different times.

But now, as I ſee propos'd, inſtead of the ſphincter, thoſe very fibres, which; being ſituated at the orifice of the bladder, and having not a muſcular, but a ligamentous nature, and keeping up a preſſure round about by means of their own elaſticity; ſhut up the paſſage of the urine, till at length they yield to the ſtronger powers which expel that fluid; and when theſe powers ceaſe to act, immediately reſtore themſelves by their own elaſtic force, and return to their former office; the very ſimplicity of the thing recommends itſelf to me, and ſhews me how I may impute an incapacity of retaining the urine, to the diſtraction, eroſion, or inciſion of theſe fibres.

Nor am I leſs pleas'd with the ſolution of a conſiderable difficulty, as it certainly is. For if there is no power of the will over the ligamentous parts, but over the muſcular only; how does it happen, you would naturally ſay, that men have it in their power, immediately to reſtrain the urine in the middle of its courſe?

It is anſwer'd therefore, that it is poſſible to do this, not by reaſon of the contraction of thoſe fibres, but by reaſon of the contraction of the levator

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ani muſcle; in that part of it which lies beneath the bulb of the urethra, betwixt that and the proſtate, like a handle.

And this part of the muſcle I would call by the name of *pſeudo-ſphincter veſicæ*; which name, however, ſuppoſes a ſphincter, though there is, in fact, none at all.

But, in order that I might be underſtood, I made uſe of the ſame name that they, againſt whom I there diſputed, had made uſe of: although, if I had happen'd to be deſirous of impoſing that name, inſtead of the ancient name; a cuſtom which I have always been averſe to; I do not ſee how it would follow, that a ſphincter of the bladder is ſuppos'd, as it is ſufficient that other true ſphincters are not wanting in ſome parts; and as, by comparing with theſe one which is not true, any-one may call the latter a *pſeudo-ſphincter*.

You ſee that this part in particular, if it reſtrain the urine by the force of the will upon it, may, if it be at any-time ſeiz'd with a convulſion, bring on a veſical iſchuria; and that with ſo much the more eaſe, as it has even often brought on that very iſchuria, when contracted, for a long time together, in order to retain the urine in obedience to the will; whether alone, or in conjunction with other muſcles, which the celebrated Gyſbert Beudt (*x*) ſuppos'd ſhould be number'd, at that time, with the ſame levatores ani; or thoſe which others have ſuppos'd, and particularly the celebrated Winſlow, in the latter part of his never-to-be-ſufficiently commended *Expoſition*, where, in deſcribing thoſe that are to be added to his treatiſe on the belly (*y*), he has taught us, that by theſe is form'd, in part, and perhaps "principally," that muſcle which is call'd the ſphincter veſicæ.

For although, in thoſe things which have been lately advanc'd, I commend the ſimplicity; yet, at preſent, I leave the matter to your determination, in conſequence of preſerving my uſual cuſtom, and conſidering it as certain, that if any thing has been aſcrib'd to me, (who am in other reſpects undeſerving) by the candour and humanity of the moſt eminent men, they have done this, not becauſe I determin'd any thing haſtily, but becauſe I made haſte ſlowly; if I may be allow'd the expreſſion; and even, where I thought it neceſſary to pauſe and take time, there paus'd and waited, till ſufficiently repeated obſervations, and the never-to-be-omitted-reading of thoſe authors, who might perhaps have ſeen, and written upon, the ſame thing on which I was in doubt, have taught me that there was no longer any neceſſity for pauſing.

And both of theſe things I will certainly do now, if ever I did in my life.

For before I adjoin that uvula, which was juſt now ſpoken of, to the other parts which naturally exiſt in the body, I will read what others have thought of it in the mean while; I mean thoſe to whom we can, with propriety, deny none of the great number of aſſiſtances, which are requir'd, if we ſpeak ingenuouſly, in a great anatomiſt: and I will, at the ſame time, of how little importance ſoever I may be, add other enquiries to thoſe which I have related.

(*x*) Diſſert. de Fabrica & Uſu Viſcer. Uropoieticor. Claſs. 3. (*y*) N. 660. & ſeq.

And the ſucceſs of theſe inveſtigations I will make known to you, after the diſſections of the following winter are finiſh'd (*z*).

16. But I will write to you the other things which relate to the diſeaſes of the genital parts, as ſoon as ever I am able; according to the promiſe I made you in the beginning of this letter. Farewel.

LETTER the SIXTY-SEVENTH

Relates to the Diſorders of the Genital Parts of both Sexes, but particularly to thoſe of the Female Sex.

1. WHAT ſtill remains to be written upon the diſorders of the belly, relates to the genital parts of both ſexes. But the greater part will turn upon thoſe of women.

2. After I had written to you (*a*) upon herniæ which happen in the ſcrotum, came out a diſſection perform'd by the celebrated Richerzius (*b*), in reading which, you will perceive, that it is not only of itſelf accurate, but uſeful in reſpect to the chirurgical cure.

In the ſame author (*c*), you will alſo ſee a peculiar hernia, either produc'd after birth, or, which is moſt probable, congenial; that is to ſay, in a girl ſix months old, whoſe left ovary, and adjoining tube, he found within that ſinus, through which the round ligament of the uterus goes out of the pelvis.

But this is to be referr'd to the claſs of bubonoceles. Of which, and of ventral herniæ, if I were to diſcourſe at preſent; I ſhould take notice of two, amongſt others, that are worthy of being remember'd; on account of what was contain'd in the dilated inteſtines; and that are propos'd in the Hiſtory of the Royal Academy of Sciences at Paris (*d*).

3. But to thoſe things which we have written upon the deſcent, and exciſion, of the uterus (*e*), relates the obſervation of Schlenckerus (*f*), of a deſcent thereof, in conſequence of the ligaments being relax'd, by the weight of the impending ovary; which had become enlarg'd and ſtony.

Thus Abraham Vater (*g*) had ſeen the ſame thing happen to another wo-

(*z*) Vid. Epiſt. totam 70.
(*a*) Epiſt. 43. & alibi.
(*b*) Obſerv. Viſcer. Abdom. labis Epicriſ. Obſ. 1.
(*c*) Obſ. 3.
(*d*) In Obſ. Anat. A. 1752. n. 5. & A. 1723 n. 7.
(*e*) Epiſt. 45.
(*f*) De Singulari Ovar. Morb. in Procœmio, & § 19.
(*g*) Diſſert. inſcripta Gravidit. Appar. in Hiſt. & Theſ. 18.

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man, from the oppreſſive tumour of a large ovary. And as, from theſe obſervations, it is confirm'd, by diſſection, that the uterus itſelf deſcends within the vagina; and it is ſhewn what cauſes, ſometimes, produce this deſcent; ſo from the obſervation of the celebrated Kaltſchmied (*b*); whether he cut out a large ſchirrhus from the uterus, or a ſchirrhous mola, which, without doubt, coher'd with the uterus in ſuch a manner, that it was neceſſary to cut it out with a knife; the ſuſpicion may certainly be encreas'd of the deception of thoſe perſons, who have believ'd, in times of leſs light and knowledge than the preſent, that the uterus had been amputated by them.

4. And although, where I was ſpeaking of the hyſterical affection (*i*), I expreſsly profeſs'd, that I would not enter into any altercation with thoſe perſons, who contend that this ought to be diſtinguiſh'd from the hypochondriac diſorder; nor, on the other hand, with thoſe who deny it; yet you will remember that, in general, I commended thoſe who refer both of theſe diſorders to the paſſion of the nerves.

And in this opinion I have been ſtill more and more confirm'd, very lately, by the authority of that very excellent, and, in reſpect of me, very humane man, count Sylveſter Ponticelli, very deſervedly Archiater and counſellor at the court of Parma (*k*); as I had alſo been confirm'd therein by other obſervations of other authors; and among theſe by two of that learned man Anthony Fracaſſini (*l*): and, in particular, by the ſecond, which is join'd with the diſſection of the body. And when you read what circumſtances happen'd in thoſe two men that are deſcrib'd; of what nature theſe circumſtances were; and in what manner they happen'd; you will readily conjecture why I made this aſſertion.

5. Now let us go on to ſubjects on which we ſhall dwell ſomewhat longer; I mean, to thoſe which relate to the impediments to venery, and ſterility. As, when I was ſpeaking of theſe things in males, we conſider'd a diſorder of the urethra, when it is not in the form of a canal, but of half a canal only, carried over the inferior ſurface of the penis; we alſo made mention of the obſervation of Salzmann (*m*), of the urethra being open'd in the manner of a ſemi-canal, but on the oppoſite ſurface; that is, through the whole dorſum penis.

As this ſeat of the urethra, although not open, Ruyſch ſaw, not twice as he ſays, but once only, if you conſider the matter attentively (*n*), and confeſſes "that he had never obſerv'd it before;" I do not doubt but it will be doing a thing agreeable to you, if I communicate another example, which was related to me by John Gianella, ſon of Charles, formerly the profeſſor here; who himſelf examin'd the caſe accurately, and is to be depended upon, in his narration; as well on account of his ingenuity and ſkill, as his diligence, and uprightneſs of manners: having been formerly my au-

(*b*) De Mola ſcirrhoſa in utero inverſo extirpata.

(*i*) Epiſt. 45. n. 17.

(*k*) Tratt. di tre Specie di Affez. Iſter. e Ipochondr.

(*l*) Naturæ Morbi Hypochondr. &c. Inveſtigat. P. 3. c. 1.

(*m*) Epiſt. 46. n. 8.

(*n*) Theſ. Anat. 3. n. 5. not. 1, & 2. & n. 22. not. 1, 2, 3.

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ditor, and very much eſteem'd by me; and being at preſent ſettled in the practice of phyſic at Stalimene with conſiderable reputation.

6. There was a man in the country of Stalimene, who, although he was ſaid to be an hermaphrodite, was nevertheleſs call'd before a magiſtrate, by a woman who aſſerted that ſhe was with child by him, and without defending himſelf ſettled money upon her.

This man, being afterwards about to ſeek himſelf a wife, and being repreſented by the brother, and others, as not being at all fit for matrimony; and the phyſicians of the neighbouring city; who were men of eminence, and had inſpected his genitals; having confirm'd this repreſentation; incens'd with the ſhame of his repulſe, and having enter'd into a law-ſuit with the brother, fell into ſo violent a diſeaſe, from theſe ſeveral vexations, that he ſoon ceas'd to live.

Leave being given to inſpect, but not to diſſect, the body, the ſcrotum and the teſtes appear'd quite in a natural ſtate as to their ſituation, their magnitude, and form.

But in the penis, which, in other reſpects, was not ſmall, nor ſeem'd to have been flaccid in the living body, were theſe unuſual appearances obſerv'd: it was turn'd upwards towards the abdomen, and the glans, which was of its uſual figure and magnitude, was entirely unimperforated; and, finally, the urethra was unuſually ſhort, and had a peculiar ſituation and ſtructure.

For it did not reach quite to the glans, nor did it lie on the inferior ſurface of the penis; but upon the dorſum penis: nor was it a perfect canal, but was open in the manner of a ſemi-canal; ſo that the mouths of my canaliculi, which could not be in the oppoſite paries, as they are wont to be, immediately became obvious to the eyes in that which was not wanting; in conſequence of their being larger than they are in other perſons: and upon inſpecting theſe parts, it was leſs to be wonder'd at, that the man ſhould have been formerly infected with a virulent gonorrhæa, as they ſaid he had been.

Moreover, in the beginning of that ſemi-canal, which was wider in the other part of it, a kind of vulva, as it might formerly have ſeem'd to the mother, and other good women, hung over.

But no foramen belong'd to this, except that it carried the urine into the beginning of the ſemi-canal; which it was very certain, from other teſtimonies, had been wont to flow out from the ſemi-canal, at the time of diſcharging it, and to have ſome part of it ſprinkled upon the man: but we had no information of what happen'd to the ejaculated ſemen, in like manner, which was under a neceſſity of paſſing through that ſame foramen, into the ſemi canal.

And, indeed, you might introduce a probe into the foramen, and paſs it on to ſome cavity or other, which it was natural enough to conjecture belong'd to the bladder; but to examine into the grounds of our conjectures, and other circumſtances, by diſſection, we were not, as I have already ſaid, permitted.

7. Gianella not only related what he himſelf had been able to ſee, in this man, without diſſection; but he alſo told me of a ſituation of the pudendum in a certain woman, which is ſtill more ſurpriſing: he himſelf, however, had only ſeen the repreſentation of it; but he had heard it for a certain and atteſted

teſted fact, from the inhabitants of Stalimene; and this was the tenor of his narration.

About forty years ago, there was a maid-ſervant in the houſe of the Venetian nobleman who was governor of Stalimene, that was married to one of her fellow-ſervants; but ſhe had that part which we have mention'd above, not in the place where it ought naturally to be, but above the navel, and there very narrow.

Being impregnated, however, but not able to bring forth; ſhe ſent for a ſurgeon, to enlarge the paſſage for the infant, who endeavour'd to extricate himſelf from his confinement, in vain: and this the ſurgeon did in ſuch a manner, that the ſection being produc'd from the lower part of that aperture, quite to the os pubis; whether it was entirely from want of ſkill, as was there ſuppos'd, or rather becauſe he intended to make uſe of the Cæſarean ſection, as it is call'd, which was not ſufficiently well known to him: it is certain, however, that the infant was ſav'd, and the mother at length perfectly cur'd alſo, after a long courſe of attendance.

But what happen'd to her afterwards, is not known at Stalimene; becauſe ſhe went away from thence, together with her huſband, as neither of them were natives of the place: but it is ſufficient for our preſent purpoſe, that the figure ſtill remains there, which was left by the phyſician of the woman, and which faithfully repreſents her abdomen, as it had been before the ſection was made.

8. Now ſince I have begun to ſpeak of women that are unfit for matrimony; I will immediately ſubjoin what I have obſerv'd in the diſſection of two of them, not in regard to the ſituation indeed, but in regard to the occluſion of the genitals.

9. A woman, of ſeventy years of age, had already lain a long time in the hoſpital, on account of an aſthmatical diſorder; when a peripneumony came on, and carried her off: this happen'd about the middle of March, in the year 1752.

From the carcaſe, which was emaciated, the lungs were extracted by our Mediavia; and theſe he affirm'd to be actually hard.

But I myſelf afterwards demonſtrated ſome parts, to the ſtudents, from this body; and particularly in the head and the genitals. And in the head indeed, I found nothing that was preternatural; except a coalition of the tendon of the trochlearis muſcle of one of the eyes, with its trochlea: ſo that the muſcle did not follow the fingers of the perſon who drew it back.

But in the parts which were created for the offices of generation, I found a much greater number of appearances, quite different from the natural ſtate, than I could have wiſh'd. For, in the firſt place, one of the Falloppian tubes had coaleſc'd with the teſtes; by means of its fimbriated extremity; in ſuch a manner, that the orifice, which lies betwixt the fimbriæ, did not appear: and the other had that orifice in an impervious ſtate, and its moſt neighbouring part immoveable, by reaſon of the ala veſpertilionum, which; not being pretty wide there, as it generally is, but very narrow; connected the tube to the teſtis.

The parietes of the uterus were thick: and the ſection thereof ſhow'd a ſanguiferous veſſel, or if you pleaſe a ſinus rather, comprehended within their ſubſtance,

ſubſtance, for the length of a full inch, and of a diameter equal to a line and a half of the inch of Bologna. And in this ſinus we ſaw a little coagulated blood.

The internal ſurface of the uterus was, in the whole of it, very ſlightly moiſt: in the fundus, and in the lower part of its neck, it was brown: and in the other part of a white colour: and why I mention theſe circumſtances here you will ſee below. The ſame lower part of the cervix was narrower than it ought to be; and the oſculum uteri very ſmall.

When I attempted to paſs a probe down through this orifice, into the vagina; I felt an obſtacle in the way, which prevented it from going down below the orifice, except in the extreme part of it. I was therefore oblig'd to introduce the probe through the orifice of the vagina.

But as it was not poſſible to paſs it up above the length of a ſmall inch; I cut into the vagina deeply, in a longitudinal direction; that if there were any cavity it might come into ſight. As I ſearch'd in vain for any ſuch appearance by theſe means; I then cut into the vagina tranſverſly in more than one way: but no where did it appear hollow, nor did even any traces of a cavity appear.

The whole of the vagina; if you except the beginning and the end; was perfectly like a ſolid cylinder: being made up of a ſubſtance which was every where white, and hard in ſome degree: ſo that it was not poſſible to diſtinguiſh the parietes from that ſubſtance which was included therein; they being continu'd into each other, and perfectly ſimilar.

Although this was the ſtate of the vagina, it ſeem'd, nevertheleſs, to have loſt nothing of its diameter, when look'd upon externally; but it had loſt ſo much of its length, that although, from the orifice thereof to the upper part of the uterus, there was an interval of eight fingers breadths; the vagina was equal only to three, and the five others belong'd to the uterus: yet with this variation, that the cervix was longer than the fundus, contrary to what is generally the caſe.

But the cervix had no faſciculi, nor lines, protuberating internally. And it was in vain that, in this part, or in the fundus, or in the extremities of the vagina where it was not ſtopp'd up, any traces of cicatrices were carefully look'd for by me: nor were they to be found in any other part of the genitals. The inferior part of the vagina was without any traces of the hymen.

10. However, I believe this very conſiderable coalition of the vagina to have taken its riſe from eroſion; or from ſome laceration, which had not been attended to at all in a curative method, or at leaſt only with great negligence: and we may ſuppoſe that this was a conſequence of her laſt child-bearing; for the woman had been married, and had not loſt her huſband many years before, with whom ſhe could not have liv'd in matrimony, nay could not have barely liv'd, if ſhe had been in this ſtate of occluſion from the original formation.

For how do you think that the menſtruous blood, which we have no reaſon to ſuppoſe did not flow from a uterus of that kind, in a flouriſhing time of life, could be retain'd within the cavity thereof, without the deſtruction of the woman? I, at leaſt, could hardly conceive, that it would happen otherwiſe in regard to the fluid wherewith the uterus is internally moiſten'd in a

natural

natural ſtate; as I have alſo ſaid that I ſaw it to be in this woman; if it were not carried back by the lymphæducts, or other abſorbent veſſels.

But can you imagine, that theſe veſſels are equal to the taſk of carrying back the blood alſo, and in that quantity wherein we know that it flows into the cavity of the uterus every month? And nearly the ſame queſtion that I aſk you in regard to this woman, I aſk you of another alſo, whoſe body had been diſſected in the college but two months before, and had afforded the following occaſions of remark.

11. An old woman had died, in the hoſpital, of no other diſorder, to all outward appearance, but of a decay of natural ſtrength: nor was this to be wonder'd at in a perſon who was more than fourſcore and twelve years of age.

The body was very lank and contracted. From the abdomen two herniæ were prominent; the one in the middle of the hypogaſtrium, which was equal in ſize to the head of a child, and the other at the right ſide of the former. In both of theſe herniæ was a part of the inteſtinum ileum; but in the leſſer was a part of the omentum alſo: which, except that they adher'd to the hernial ſacs, had no mark of diſeaſe beſide.

The ſtomach ſeem'd to be lower than it naturally is; which it might be, either becauſe it had been drawn downwards, by that part of the omentum which was included in the herniæ, as we have ſaid; or rather from other cauſes, and amongſt theſe from a certain gland, as it ſeem'd at firſt to be, which was form'd in the omentum, near to the ſpleen, and was of the ſize and ſhape of a very large pigeon's egg.

When I inſpected this gland a little more attentively, I ſuſpected it to be another ſpleen; and this ſuſpicion was very clearly confirm'd by diſſecting, and comparing it with the neighbouring ſpleen: for the ſtructure and ſubſtance of the two were exactly the ſame.

To the leſſer ſpleen went ſome pretty thick ſanguiferous veſſels that belong'd to the omentum. The artery of the larger ſpleen was large; but tortuous in the ſlighteſt degree only: nor had it any thing hard in ſuch an advanc'd age; nor had any other of all the arteries I examin'd, any thing bony in them; if you except the iliacs; nor yet any of the valves of the heart, notwithſtanding thoſe that lie at the beginning of the aorta, were very much contracted, and in ſome meaſure diſeas'd.

Yet the whole portion of that trunk, which lies in the belly, was diſpos'd to oſſification; as it was of a ſurface almoſt every where diſtinguiſh'd with white ſpots, and with certain inequalities, and that internally. And the ſame trunk had this unuſual appearance beſides, that immediately below the emulgents, it was inflected to the extent of two or three inches: which inflexion could not be imputed to the vertebræ, as theſe I ſaw to be in a proper ſituation, and in a natural ſtate.

But to return to the viſcera; the glands of the meſentery were neither ſmall, nor hard, nor yet of a black colour, or at leaſt externally, but rather ſomewhat red: the appendicula vermiformis was ſhorter than uſual by the extent of two inches, very ſlender, and intirely ſolid; ſo that it ſeem'd never to have had any cavity: and you would certainly have been in doubt whether the liver had always been ſound.

For the right lobe; in that part where it was now very near to the left, and from whence it continu'd to extend itſelf downwards, contrary to cuſtom; ſhow'd the convex ſurface to be not ſmooth, and of a white colour: and, if you cut into this part to ſome conſiderable depth, you found the ſame colour; and the ſubſtance thereof approach'd to the nature of a ligament.

It now remains to ſpeak of the genitals, as I have promis'd you to do. Both of the tubes were ſo grown into one ſubſtance with their ovaries, that the fimbriæ of neither of them, and ſtill leſs the orifice which lies betwixt thoſe fimbriæ, appear'd. And within the ovaria were hydatids.

The fundus uteri being cut open; in the middle of its poſterior ſurface was ſeen a pretty high and ſomewhat round excreſcence, which at firſt ſeem'd to be made up of veſicles as it were; but when cut into was found to conſiſt of the ſolid ſubſtance of the uterus.

As I attempted to paſs a probe from the fundus into the vagina, but was not able; I cut open the cervix, and found that the parietes of the lower part of it had coaleſc'd together, for a very ſhort ſpace; and even that the parietes of the oſculum uteri itſelf had ſuffer'd a coalition, in ſuch a manner, that no paſſage remain'd; unleſs perhaps the moſt ſtreight and confin'd.

22. That theſe coalitions might be brought on by ſome laceration left after a difficult birth, as I have ſaid (*o*), is perhaps confirm'd from hence; that, in both the women, there was found to be an occluſion of the tubes, and a concretion thereof with the ovaries.

For Abraham Cyprianus (*p*) obſerv'd the tubes to have been in the ſame ſtate; as he alſo ſhows by the repreſentation which he has added (*q*); in a woman, who, from the difficulty of her fourth child-bearing, and ſtill more from the moſt violent dragging of an unſkilful midwife, having been thrown into a very violent inflammation of the uterus, and of the parts annex'd thereto; as was ſhown by the very ſevere pains of her belly, and particularly by the pains about the loins; and at length eſcap'd from thence with difficulty; inſtead of being a child-bearing woman, became barren; and continu'd ſo as long as ſhe liv'd, and ſhe liv'd ten years.

But theſe things happen to women; and I wiſh I could ſay to a few only; from the ſame or ſome other ſimilar cauſe; and make thoſe barren, who had, of themſelves, been fertile, and would continue to be ſo.

Yet it is certain that ſome have occluſions, or obſtructions, of the paſſages neceſſary for generation; even from their original conformation; and not only of the hidden parts, but of thoſe, likewiſe, which are obvious to the ſight or to the touch; as I have taken notice on a former occaſion (*r*).

And you will have a double example of this kind alſo from Boehmerus (*s*): Who not only diſſected a virgin, that was entirely without any perforation in the natural parts; at the ſame time that no traces of a cicatrix appear'd; but alſo inſpected the body of a woman, with whom her huſband had never been able to perform the conjugal duties, and found the orifice of the genital open indeed; but in the place of one vagina, found two, leading to a bipar-

(*o*) n. 10.
(*p*) Epiſt. ad Millington.
(*q*) Tab. 2.
(*r*) Epiſt. 46. n. 11. & ſeqq.
(*s*) Vid. Act. Erud. Lipſ. A. 1758. M. Januar.

tite

tite uterus; as in cows and ſheep; and theſe, as far as we can ſuppoſe, ſo narrow that neither of them was capable of receiving a man.

But of theſe occluſions, or impediments; which are not occult, but obvious, either to the ſight or to the touch; there are ſome that may be remov'd, and ſome that can not.

For thoſe can eaſily be remov'd, that conſiſt in the membrane which is ſtretch'd over the orifice of the vagina; or in bands, or fillets as it were, of the ſame kind; by one of which I found the parietes of the vagina tied together in a young virgin, as I have related to you (*t*). But thoſe that are of the ſame kind with the impediments juſt now referr'd to, by me, from Boehmerus, and found in that married woman, who can remove?

13. And that the cauſe of an accidental coalition, or occluſion, may not only be from laceration, or from inflammation, but from eroſion alſo, has been acknowledg'd by me, both above and elſewhere; whether ſuch an eroſion be the conſequence of the lues venerea, or of an uterine fluor.

For from the latter of theſe diſorders having preceded, even in the moſt pure and untouch'd virgins; ſuch as ſhe was whoſe diſſection I have given you the relation of, in the forty-ſixth letter (*u*); I believe we may, if we chooſe it, account for, with ſome pretence to plauſibility, that whitiſh little membrane, which ſhut up the lower part of the cervix, near to the oſculum uteri.

But this fluor muſt have been of the more acrid kind; and not of that more frequent ſpecies, whereof I have ſent you many of my obſervations, in the forty-ſeventh letter. To theſe you may add that which I now ſubjoin; although, by reaſon of other things, of greater moment, which it contains, I ſhould rather have ſent it to you at the time in which I wrote the ſixtieth, ſixty-ſecond, and ſixty-third letters, if I had made it before that time.

14. A woman, about ſixty years of age, had been carried off by an apoplexy, within four days and no more. Three of theſe days were paſs'd at her own home: but on the fourth ſhe was at length brought into the hoſpital; at which time ſhe was ſo oppreſs'd by her diſeaſe, in the whole of her body, that we had no mark whereby to judge of a very violent paralyſis being in the left ſide, but the venæſection which had been perform'd at home on the right ſide.

I was at this time teaching anatomy in the college; it being that very cold ſeaſon, which began before the latter end of January, in the year 1758, and continu'd to be very troubleſome to every one: and this body was brought to the college, where the greater number of its parts were diſſected, but particularly the brain; and this about the eighth day after death, when that celebrated man Caldani; who, in conſequence of his great partiality to me, would come hither from Bologna, to attend all the public exercitations of that year; was preſent.

The ſcull adher'd ſo cloſely to the dura mater, that it could not be pull'd away without the moſt ſtrong exertions. The veſſels that ran through the pia mater were diſtended with blood. The ſubſtance of the cerebrum was without moiſture, and hard; I ſuppoſe, from the violence of the extreme cold, where-

(*t*) Epiſt. 50. n. 51. & ſeq. (*u*) n. 17.

by the bloody ſerum, which we found, in great quantity, in the left lateral ventricle, had been frozen, and concreted into a great number of lamellæ.

Moreover, although in the poſterior extremity of the ſame ventricle, there was a little black, coagulated, and pretty hard blood; and the baſis of the ventricle ſeem'd there to have ſubſided into a kind of a cavity, which contain'd that blood; yet ſince ſo great a quantity of ſerum, as that I have mention'd, could not have come from ſo ſmall a quantity of blood; I conjectur'd that both this blood, and the greateſt part of that ſerum, had paſs'd through a rupture of the ſeptum lucidum, from the right ventricle into the left.

Nor was I deceiv'd in my conjecture. For, upon opening the right ventricle, there was no ſerum to be ſeen; unleſs that there might be a little perhaps in the anterior extremity: but there was ſo great a quantity of blood, of the ſame kind with that deſcrib'd in the left ventricle; being black, and coagulated, and even having got that degree of hardneſs which is naturally brought on by freezing; that we ſaw the whole of this ventricle to be very much dilated: the ſubſtance of the cerebrum being very greatly extenuated, not only at the baſis, but alſo in the external ſide.

Yet no diſeaſe appear'd in the cerebellum; none on the external ſurface of the medulla oblongata. But what diſeaſe there was on the internal ſurface of the baſis of the ventricles; eſpecially of the right; how great this was, or of what nature, and in what parts thereof it chiefly was; I could not very well diſcern: and that on account of the great effuſion of blood, as well as from the effects of the froſt in particular.

The thorax, which had been open'd before, ſhow'd two foramina in the diaphragm, as I had before ſeen, inſtead of one through which the vena cava is carried. And in the heart, which was fat; as the reſt of the body alſo was in a conſiderable degree; I obſerv'd little bony ſcales about the ſubjected valves of the aorta, and on the neighbouring internal ſurface of the ſame artery: and not there only, but up and down in the remaining trunk likewiſe; and even in the part where the curvature of this veſſel terminated; which part, as well as the curvature itſelf, was dilated; was ſeen moreover a kind of inequality of ſurface, and a colour different from the natural colour.

But in diſſecting the belly, and examining its parts, we met both with bony lamellæ, and with greater inequalities of ſurface: and indeed here and there were appearances of bloody eroſions; all which appearances we alſo ſaw to be propagated through the iliac arteries.

The crural arteries likewiſe, where they deſcended through the thighs, were very rigid; and, in the hollow of the ham, as I at leaſt obſerv'd on one ſide, bony.

And certainly little bony ſcales were not wanting in one of the carotids: and in the ſpermatics themſelves was a hardneſs, which ſhow'd oſſification to have been begun.

Finally, that the woman had labour'd under a uterine fluor; from whence I took occaſion to ſend this obſervation to you in the preſent letter; was ſhown by a great quantity of matter, which was thick, and of a white colour inclining to cineritious; and with which the cervix uteri, and the neighbouring part of the vagina, were daub'd over.

And

And as I ſaw the lower part of this laſt-mention'd cavity, and the orifice itſelf; which was very large; and the lower parts thereabout, to be very red; going on from thence, therefore, with the ſcalpel, to the upper parts, I not only ſaw the ſame kind of matter, but found the oſculum uteri, and the cervix, both of them to be very wide; and that in an equal degree.

And through the internal ſurface of the fundus uteri, which was in other reſpects ſmooth, I ſaw ſanguiferous veſſels; in a great number, and thick, and diſpos'd in no certain order; which, by preſſing the fingers upon them from below, were tumid with blood that ſeem'd ready to burſt forth; juſt as I have been wont to ſee it in thoſe women who had lately menſtruated.

15. I imagine he would not ſee a ſtate of the vaſcular ſyſtem different from the preſent, who ſhould inſpect the internal membrane of the noſtrils, when affected with a coryza; for that a uterine fluor of ſuch a kind, has an affinity to this diſorder, I have already ſufficiently ſhown, on a former occaſion (*x*), that the ancient phyſicians, not to mention the more modern, have allow'd.

And I have ſaid enough on the other circumſtances; which are obſerv'd in this diſſection alſo; I mean, thoſe that relate to the cauſes of the ſanguineous apoplexy and hemiplegia.

And indeed, in another place (*y*), you are told, what effects of a very cold ſeaſon have been found, by me, within the cranium: and after you have compar'd therewith theſe others that have been obſerv'd in a ſomewhat leſs cold ſeaſon, and both of them, with the diſſection, which was made by the celebrated Leipſic profeſſor Quelmalzius (*z*), upon the body of an old man, who was kill'd with cold, when he was upon a journey, in the month of January; you will be ſurpriz'd, that in the ventricles of the brain of this man, there was only a "viſcid" lymph, and not a lymph coagulated by the froſt: for although the body had been previouſly kept warm in a gentle heat; yet as this had been done ſtill more in that of ours, and the ſerum which had concreted, in the ſame ventricles, was not for that reaſon unfrozen; and indeed as that old man diſſected by us, or this old woman, had not been oppreſs'd by the effects of cold in journeying, but had both of them died in their beds in the hoſpital; ſo I muſt ſuppoſe, either that the cold which kill'd the old man of Quelmalzius, was not ſo ſevere as our cold then was; or rather that the body had been brought into a warm place much ſooner than our bodies, which had lain in the open air.

But as to what relates to the diſorders of the arteries, obſerv'd in the ſame old woman; you may remember how many times I have ſeen the ſame in other bodies; and how many diſadvantages, to the blood's circulation, I have accounted for from thence (*a*). And as theſe diſorders were here more in the inferior arteries, than in the ſuperior; and the blood could for that reaſon not be mov'd ſo eaſily through them; I ſhould believe that it was

(*x*) Epiſt. 47. n. 11.
(*y*) Epiſt. 13. n. 15.
(*z*) Progr. quo frigoris acrioris in corp. hum. effectus expend.
(*a*) Epiſt. 26. n. 32.

driven

driven in ſo much the greater quantity, into the upper veſſels, and extravaſated within the cerebrum of the old woman.

But when you obſerve, that, in proportion as the arteries went down farther from the heart, they had the more large bony lamellæ; do not be immediately of opinion with thoſe, who object this to Boerhaave, when he deduces the oſſification of the arteries from the impulſe of the blood, where it is the ſtrongeſt; that is, where it is neareſt to the heart; as you may call to mind what I have ſaid, in more than one place, may be replied thereto.

For it is more than once that I have ſeen the ſame thing as in this woman; although never in ſo many arteries, as it has happen'd to the celebrated Buchwald (*b*) to ſee. Who having found the great artery, in a decrepit old man, from the heart to almoſt the whole of the curvature, not much unlike a cartilage only; and from thence become bony, together with its branches, through almoſt the whole of the body; obſerv'd this in particular, "that "the arteries of the extremities were the more oſſified, the nearer they came "to the hands or the feet."

And I wiſh that he had been able to add the ſymptoms which this old man ſuffer'd: and the kind of death whereby he was carried off; as well as have added, in the Ætiology which he has adjoin'd (*c*), ſome ſigns of conſtitutions of this kind from conjecture merely.

16. Now it would be neceſſary to return, from the conſideration of theſe diſorders common to both ſexes, to thoſe that are peculiar to women; if I had not written ſo much upon theſe ſubjects, in that very long and forty-eighth letter, that I have but juſt theſe few things to add, in regard either to unſucceſsful utero-geſtation, or unhappy birth; and this either as it relates to the mother, or the fœtus.

And in regard to utero-geſtation; to omit that I am not diſpleas'd with myſelf on account of thoſe things which I hinted on the force of the mother's imagination upon the fœtus, after having lit on ſome things which have been publiſh'd by the moſt learned men, and which ſhow nothing more than that it is not poſſible, even for the moſt ingenious men, to avoid the difficulties which ariſe from a different mode of explication, in ſome examples that can neither be denied, nor underſtood: and indeed that they evidently throw themſelves into greater difficulties, if you conſider what muſt neceſſarily be the conſequence of the explications propos'd; to omit theſe things therefore, among the obſervations of Boehmerus; which I have frequently, and with great good reaſon, recommended (*d*); beſides others that relate to the hypochondriac or hyſterical affection, to the dropſy of the ovarium, to an infant who was born with the hydro-rachitis, I would have you read one which has a peculiar reference to the preſent occaſion, and therewith increaſe the number of fœtuſſes found in the Falloppian tube.

And the celebrated Kierlingius (*e*) has produc'd two obſervations; of unſucceſsful labour, or of the time ſucceeding to child-birth being fatal; which,

(*b*) Obſ. Quadrig. Obſ. 3.
(*c*) §. 13.
(*d*) Vid. Act. Lipſ. A. 1758. M. Januar.
(*e*) Diſſert. de Utero poſt. partum inflamm. §. 14. & 6.

as well as the former, I would have you add to the Sepulchretum. The one is of a lying-in woman, who died of an inflammation of the uterus, nine days after delivery. And the other of a woman in labour, of two infants, who loſt her own life, together with the lives of her children.

I, however, happen to have only one relative to this ſubject: and this, ſuch as it is, I will deſcribe to you the more willingly, becauſe I have heretofore ſaid (*f*), that I ſhould probably give you the relation.

17. A fœtus, of the female ſex, was brought, from ſome other place, into the hoſpital, by the ſtudents, that I might diſſect it; and this was about the middle of March, in the year 1751.

The perſon who had given it to them, ſaid that it was a fœtus of nine months; that it had liv'd two hours; and that the death of its mother had ſucceeded, ſoon after, to that of itſelf: that what kind of diſeaſe the mother had been carried off by, was unknown to him; but that theſe things had certainly happen'd two days before.

Theſe laſt circumſtances might poſſibly be true: but whether the former were true likewiſe, I doubted very much; for the ſize of the whole body ſhow'd the fœtus not to have been ſo far advanc'd; and the funiculus umbilicalis not being tied, ſhow'd that it had not liv'd as was ſaid; and what we found upon diſſection ſeem'd moreover to confirm my ſuſpicions.

For when the thorax was open'd, I found the lungs to be of a red colour, degenerating into a dark brown; and I ſaw that parts of theſe lungs, when laid upon water, fell immediately to the bottom.

Upon opening the abdomen, a very great quantity of blood was found extravaſated into the cavity of the belly. Upon exhauſting, and wiping away of which, no inteſtine appear'd; if you except the rectum, and ſome part of the colon, continued therefrom; but neither the meſentery, nor the greater part of the meſocolon, were any where to be ſeen.

Then obſerving the whole convex ſurface of the liver to adhere to the diaphragm, and to the neighbouring muſcles of the abdomen; and the other ſurface, or the concave, to be not a little unequal; and gueſſing how the caſe was; I found all the inteſtines, and meſentery, which ſeem'd to be deficient, confin'd under this hollow ſurface, and cover'd over with a pretty thick membrane, which was of a tenacious nature, and rough with ſome ſmall ſandy particles as it were; being alſo connected with that ſurface of the liver.

The ſame ſurface being eroded, or lacerated, for a very conſiderable ſpace, ſhow'd from whence ſo great a quantity of blood had flow'd into the belly. And nevertheleſs, from the vena cava, which was ſoon after cut into at the diaphragm, a great quantity of blood flow'd forth: and this was black; of which kind that effus'd in the belly, and that found in the veſſels of the whole body, was alſo.

I omit other things which do not belong to the preſent place, as they were demonſtrated, by me, to be in a natural ſtate in this fœtus: this one thing, however, I will mention, that although there was meconium in ſome of the upper inteſtines, there was none in the rectum: which circumſtance, and the

(*f*) Epiſt. 39. n. 28.

ſmallneſs of the viſcera, that correſponded, in ſize, to the other part of the body, confirm'd that the fœtus had not arriv'd to the age of nine months; and eſpecially as theſe circumſtances were join'd with a very great ſoftneſs of the parts, which was very remarkable in the brain, as well as elſewhere.

For when I had open'd the cranium, we ſaw the ſubſtance of the cerebrum and cerebellum flowing abroad, almoſt in the manner of a kind of jelly.

However, there was no ſtrong ſmell in the whole body, nor was any mark of putrefaction obſerv'd. And all the membranes gave an immoderate reſiſtance; if you attempted to tear them aſunder with the knife, or with your fingers.

18. Any one who knew, for a certainty, what ſymptoms had preceded or accompanied delivery; or had even examin'd the placenta; might perhaps conjecture the cauſe of thoſe things which we ſaw in this fœtus: or if not of all, at leaſt of ſome; and particularly of the effuſion of blood. And you will call to mind, that mention of this effuſion of blood, in a fœtus, has been made formerly (*g*) to you by me; and that from a laceration of the liver alſo. But we muſt now paſs on to a far different kind of diſorders. Farewel.

LETTER the SIXTY-EIGHTH.

Contains ſome Things in regard to Fevers, but ſtill more in regard to Tumours.

1. AFTER the forty eighth letter; which was the laſt upon the diſeaſes of the belly; the ſubjects of the others, that I ſent to you afterwards, related to thoſe diſeaſes, which either exiſt in the body univerſally; or if in parts, which require a ſurgeon more than a clinical practitioner. As I now, therefore, intend to preſerve the order which I then follow'd, I ſhall begin with the conſideration of fevers, and tumours; treating of the firſt in a very few words, and of the ſecond ſomewhat more diffuſely.

2. In regard to fevers, as they injure, and become fatal, chiefly by means of another diſorder which is joined to them; and even frequently ariſe therefrom, and are fomented thereby; you readily perceive of how much importance it is to know the nature, and ſeat, of this diſeaſe, which is joined thereto.

However, as diſſection ſometimes ſets both of theſe clearly before our eyes; as, for inſtance, an inflammation of the viſcera, or ſome ulcer; ſo very

(*g*) Epiſt. 48. n. 19. & ſeqq.

frequently

frequently it ſhows neither of them; of which caſe there are obvious examples: and ſome of theſe we have even produc'd from the papers of Valſalva, when writing to you (*a*) on the ſubject of fevers.

And this is the more to be lamented, when it happens in thoſe fevers; as it frequently does; which are not only moſt pernicious, but attack in greater numbers at the ſame time; I mean malignant and epidemical fevers. For it is not then of ſo much importance to counteract the fever, as it is to counteract that malignant quality which is join'd thereto; and which is, to the great increaſe of the difficulty in ſuch a counter-action, almoſt peculiar in every conſtitution.

And certainly, unleſs you endeavour to overcome this malignant quality for the moſt part; you do the ſame thing, as if you ſhould endeavour to overcome a fever, which had its origin from the bite of a viper, by antifebrile remedies; without paying any regard to the poiſon infus'd; to make uſe of the ſame example, which I perceive, from the Hiſtory of the Royal Academy of Sciences at Paris (*b*), the celebrated Du Queſnay has made uſe of alſo.

For which reaſon, we ought the more to give thanks to the providence of Almighty God, that, in ſo very great an obſcurity, and variety, of caſes, it has favour'd us with a remedy, the powers of which, in overcoming ſome dangerous fevers at leaſt, is prov'd by experience; though the method in which it acts is ſomewhat obſcure; I mean the Peruvian bark.

For this remedy, although ſome of theſe fevers ſeem to have one kind of malignity join'd with them, and ſome another; as appears from the external cauſes and ſymptoms; can nevertheleſs counteract the one and the other equally; and ſubdue their malignity; as I have learn'd both from my own obſervations, and thoſe of others.

Nor was the matter which has begun to be thrown out of the blood, either upon the ſkin, or about the joints, by any means repugnant to the ſalubrious efficacy of the bark; not even when repell'd inwards, from thence, by the force of the external cold.

For a very eminent cardinal was cur'd by the bark of a malignant fever, into which he had fallen, in conſequence of ſuch a repulſion; as I have written to you on a former occaſion (*c*): and that very famous man Haller was alſo cur'd thereby of a very violent fever, which had come upon him in conſequence of a gout being thus repell'd; and which was attended with an eryſipelas of the face likewiſe: and this he relates in the remarks that he has made upon the hundred and fifty-ſecond diſputation, among thoſe which he has collected and publiſhed, as "contributing to the hiſtory and cure of diſeaſes."

For it is paſt a doubt, that theſe things are not ſo much to be attended to, as this which I then ſpoke of; I mean, whether the fevers are periodical: that is, whether they are wont to have an intermiſſion, or a remiſſion at leaſt; ſo as to afford us room to hope, that, by a timely and proper uſe of the bark, both the fevers themſelves, and their attendant malignity, will be overcome.

(*a*) Epiſt. 49. n. 2. & n. 12. & ſeqq.
(*b*) A. 1753.
(*c*) Epiſt. 49. n. 30. & ſeqq.

Nor does the bark only overcome what is febrile; but even that which i not febrile; ſo that it does but recur periodically: although this effect is not ſo general, when the diſorder is without any manifeſt fever: and as we have already ſaid (*d*), that this has been obſerv'd, ſo we might now alſo confirm it by a more recent, and more clear obſervation of Stephanus Weſzpremus (*e*); I mean, of an equally ſevere, and obſtinate, hemicrania being overcome by the ſame remedy, after having been already exacerbated every fourth hour, for two weeks together; and not having remitted till after two hours.

And if this obſervation, which was made and publiſh'd in the year 1756, could have exiſted fifty years before; when I at length with difficulty put to flight that very ſevere hemicrania (*f*), which return'd every day at the ſame hour, by the preſcription of a number of different remedies; I ſhould certainly have made uſe of none more readily, and perhaps more ſucceſsfully than this; notwithſtanding I had been ignorant of the mode in which it produces its effects.

3. And I could wiſh the malignant and epidemical fevers, whereof we had begun to ſpeak, were all periodical, as they are almoſt all of them join'd with a various and obſcure force of malignity; we ſhould then have in this cortex a medicine, which, although we might be ignorant in what manner it operates, we might nevertheleſs try with a reaſonable hope of ſucceſs.

But they are very often ſynochæ, or continual fevers; and ſuch as, if you diſſect the bodies of thoſe who have been carried off by them, either ſhow nothing, as I have ſaid in the beginning, which diſcovers the peculiar nature, and ſituation, of the principal diſeaſe; or ſhow conſiderable and evident injuries of the viſcera indeed, but ſuch as; if you compare them with thoſe ſymptoms that have been obſerv'd in the patients while living; you will naturally conceive to have been produc'd by ſome other latent and principal diſeaſe.

That is to ſay, by way of example, an inflammatory fever of the viſcera, after diſſection, ſhows the viſcera to have been inflam'd, whether it is benign, or malignant; but in the living patient if it be benign, it is alleviated by repeated blood-lettings: if malignant, it becomes worſe, and is very ſoon fatal.

The cauſe of the difference is another principal diſeaſe being join'd to it; as in that fever at Roan deſcrib'd by the celebrated Malouin (*g*), which, about the end of the year 1753, carried off a great number, in a very ſhort time, in that place.

For by reaſon of the malignant acrimony of the matter which irritated the ſtomach and inteſtines, that inflammation was at length produc'd, which was found in thoſe viſcera, and was already degenerated into a gangrene: the other internal parts being unhurt, and particularly thoſe of the head; which otherwiſe had been troubled with a pain, that aroſe from a conſent of parts, and increas'd every day ſo as to bring on a delirium.

The college of phyſicians at Roan, therefore, prudently and uſefully determin'd, that the inflammation was not then to be attended to; as it either did not exiſt in the beginning, or aroſe accidentally in the progreſs of the diſeaſe:

(*d*) Ibid. n. 29. in fin.
(*e*) Obſerv. Med. 4.
(*f*) Epiſt. 1. n. 11.
(*g*) Mem. de l'Acad. R. des Sc. A. 1753.

but

but that every method muſt be taken to eliminate that very acrid matter from the firſt paſſages; for from this, if it were left within, a permanent irritation is much more to be fear'd, than a tranſient one from purgative remedies, eſpecially when they are of a milder kind.

And you will do rightly, if you add to the Sepulchretum what appearances were found in thoſe carcaſes, and in others alſo, when epidemical fevers were frequent; a diſſection of which kind you will find in the ſame author: and, in like manner, what appearances were found while peſtilences attack'd men in this age; or what happen'd much more frequently, and in a greater number of places, when they attack'd oxen. For we have accounts of the appearances found upon diſſection, in the viſcera of theſe animals, committed to print, both by our own phyſicians, and the phyſicians of other countries. Yet you will never fail to remember, that whatever marks of diſeaſe were found in the viſcera, upon diſſection; whether of a gangrenous, or any other kind; were certainly rather the effects of ſome latent and principal diſeaſe, than the diſeaſe itſelf.

And indeed you muſt remember, that ſome things, which are propos'd in thoſe diſſections, as if preternatural, might perhaps be agreeable to the cuſtomary laws of nature; as, for inſtance, when in oxen which died of the peſtilence, you will ſee remark'd, here and there, too great a fullneſs of the gall-bladder: and you will even ſee it conſider'd, by ſome, as the cauſe of the dyſentery wherewith the oxen had been afflicted, and of the inflammation and ſphacelus of the inteſtines; ſuppoſing that, in proportion as the bladder was more fill'd with eroſive bile, the greater quantity would of courſe be diſcharg'd into the inteſtines.

Only one of theſe authors, that I know of, and that is Mauchart (*b*), thought the matter might be differently explain'd; either by conjecturing that the bladder is diſtended, not ſo much by the bile, as by the particles of the air expanding itſelf in the putreſcent bile; or, when he ſays that this expanſion of the air is "ſometimes" (not always) obſerv'd; by ſuppoſing, that, from the coats of the inteſtinum duodenum being tumefied; or ſpaſmodically conſtricted; or even compreſs'd by the expanſion of flatus; a free and fuller influx of the bile into that inteſtine, through the extreme part of the ductus communis, is prevented; this extremity of the duct being contracted for the reaſons above mention'd: from whence the bile is diverted into the veſicle; and not only by regurgitating, but by flowing in very plentifully; and by theſe means diſtends it: and eſpecially (which he might have added) as there are ſeveral paſſages naturally lying open, through the hepato-cyſtic ducts, into the gall-bladder of oxen.

To me however, before I read Mauchart, occur'd another reaſon for doubting, which is perhaps leſs intricate, and greatly more agreeable to the common laws of nature. For as nature has ſo order'd it, that a fuller afflux of bile ſhall be promoted, at the time when the ſtomach, and the neareſt inteſtines, being fill'd with aliments, preſs upon the veſicle themſelves by their own tumour; and as the animals of that ſpecies, from the very firſt days of their having contracted the peſtilence, are averſe to all kind of food; I

(*b*) Diſput. de Lue Vaccar. Tubingenſi §. 18.

thought it muſt follow from hence, that the veſicle, being never compreſs'd, retains a far greater quantity of the bile, which is continually flowing in, than it generally does at other times, and is immoderately expanded thereby.

And this reaſon for doubting, ſuch as it is, I advanc'd in the anatomical theatre; and have the ſatisfaction to find that it gave pleaſure to my auditory; and particularly to that celebrated profeſſor, and, while living, my very humane friend, Charles Gianella; as I learn'd from the diſſertation which he has publiſh'd (*i*).

4. But in regard to tumours; for after fevers I wrote of theſe to you; both the ſituation, and the nature, of them appear very frequently of themſelves; and ſtill more evidently by diſſection: ſo that you may transfer into the Sepulchretum, without any doubt, thoſe things which are propos'd, and made mention of, by that diligent obſerver J. Alb. Henr. Reimarus, in his very uſeful diſſertation on the tumour of the ligaments, which is call'd the fungus of the joints.

Nor will you only find obſervations of that tumour, in the ligaments about the joints; although chiefly of that; but of others alſo, in this diſſertation: others, for inſtance, that have been met with at the joints in like manner; particularly of the knees; ſuppoſe either from an acrid humour (*k*) collected in the cavity of the joint, and eroding the bones, or the cartilages, or changing theſe cartilages (*l*) into another ſubſtance, and making them tumid; or from the mucilaginous glands (*m*) becoming tumid, and giving occaſion to injuries both of themſelves, and the bones; and on the other hand receiving, from their diminiſh'd preſſure, a cauſe of becoming ſtill more tumefied.

I omit other examples which you will find with theſe; and every one diſtinguiſh'd, as far as it is poſſible, by their peculiar ſigns: ſo that we cannot help wiſhing to read the other things, which, in conſequence of his being preſs'd for time, he had not in his power to add; particularly on the dropſy of the joints (*n*), the marks whereof he had propos'd.

But he even very clearly explains the cauſes of the ſigns, from the appearances that are ſeen by diſſection; as, for inſtance, the rotundity of the ganglion (*o*), its mobility, and its diſcuſſion from a fall, or a blow: and that whether inflicted purpoſely, or by accident; and not to mention any thing more, the expanſion of the bones in the ſpina ventoſa (*p*), an obſervation of which diſeaſe, and a diſſection of the part diſeas'd, are produc'd: and theſe are ſo much the more worthy of our attention, as the diſeaſe had attack'd the tibia not of a boy, but of a man of four-and-twenty years of age.

Moreover, you will find in other authors, ſtill more obſervations, and diſſections, of expanded bones, that you may add to the Sepulchretum. For beſides thoſe which Abraham Cyprianus (*q*) ſhows to have frequently occurr'd to him, there is another extant which is deſcrib'd, and treated of at large, by Frid. Jac. Titmannus (*r*).

(*i*) Diſſert. inſcripta, non ſemper ex cadeverum ſectione, &c.
(*k*) §. 48.
(*l*) §. 58.
(*m*) §. 50.
(*n*) §. 46.
(*o*) §. 65.
(*p*) §. 62.
(*q*) Epiſt. ad Millington.
(*r*) Diſſert. Oſteo-Steatom. Caſ. rarior. &c.

And

And when you read theſe examples that I have taken notice of, and others, of the expanſion of bones; you will naturally obſerve that theſe expanſions are owing to the quantity of deprav'd fluid, which is redundant within the bones, and which urges the parietes thereof outwards; as theſe parietes give way without difficulty, where the ſame humour has ſoften'd the bony fibres, and internal laminæ; or has ſo eroded and diſſolv'd them, that a very few external laminæ are now remaining. For in either of theſe ways the bone loſes its hardneſs.

And a great number of hiſtories of this change, you will ſee pointed out by the celebrated Morand (*s*); where he gives the relation of that admirable one which he himſelf ſaw. I would have you read this hiſtory, and another which occurr'd, ſome years after this, to that eminent profeſſor at Leipſic, Ludwig (*t*).

You will ſee that, in the latter caſe, ſome bones were become ſo ſoft, as to yield to the ſlighteſt impreſſion of the finger; and others ſo extenuated, in their external lamina, that the ſubjected cells could be eaſily ſeen through them: and in the former, that the ſame external lamina was, in ſome places, reduc'd to the form of a membranous ſheath, in the very bones of the femur and tibia; their ſolid ſubſtance being diſſolv'd and carried back, as it ſeem'd, into the general circulation; and at length thrown out by the urinary paſſages: for there was a ſurprizing quantity of ſediment in this fluid: and this ſediment was encreas'd, when the limbs were in a worſe ſtate; being alſo of a peculiar nature, that is to ſay, white, earthy, chalky, and ſoluble, by means of vinegar, or other acids, whereby it is certain, that bones, when macerated therein, are ſoften'd down, and brought to a ſtate of flexibility (*u*).

When you read over theſe remarks, you will perhaps call to mind the obſervation of Zellerus (*x*). For "the *acor* which exhal'd from the abdo-"men" of a boy of nine years of age, "when open'd, was very conſidera-"ble, and very penetrating:" and this boy was ricketty, and his "bones "were ſo ſoft, that it was very eaſy to cut aſunder the crooked tibiæ, and "others of the bones, with the knife; and that without applying any conſi-"derable force."

Wherefore, it was leſs to be wonder'd at, that he had nodes about the joints; as ricketty perſons generally have; and theſe "very conſiderable," in that place where the ſternum is join'd to the ribs on both ſides: and the ribs, when "cut aſunder, themſelves alſo diſtill'd blood."

And it is natural to ſuppoſe, that, by the ſame deprav'd humour wherewith the bony fibres are ſoften'd or diſſolv'd, the ſmall veſſels, which carry the blood, are eroded; and that this blood being extravaſated, the medullary oil is thereby render'd bloody; of which nature that humour alſo was, which Morand found within the bones whereof we have ſpoken: and Ludwig found the medulla fill'd with bloody coagula in ſome of his bones: yet in others of them he found it "ſcarcely congeal'd, but extremely ſoft, and almoſt "fluid:" and even "fluid and almoſt watry."

(*s*) Mem. de l'Acad. R. des Sc. A. 1753.
(*t*) Progr. Obſerv. in Cadav. cujus oſſa emollita erant propon.
(*u*) Vid. Epiſt. 58. n. 7.
(*x*) Diſput. de Morbis ex Structura glandular. c. 2. n. 15.

And

And this I take notice of here, that you may compare it with that medullary oil, which I have deſcrib'd to you heretofore (*y*), as obſerv'd by me within the exoſtoſis of the tibia of a man; and within a cavity alſo of the ſame bone, correſponding to the exoſtoſis; and that in a great quantity and very liquid: for unleſs it be in a conſiderable quantity, it cannot urge outwards the ſoften'd laminæ of the bones, as I then ſaid, and even before alſo.

In the obſervation of Morand therefore, the os femoris, at the external trochanter, and the extremity of the fibula, were become very thick: and the thickneſs of the cranium was greater in a duplicate proportion than it naturally is: but when the blood, which lay betwixt the two tables, was preſs'd out, by a compreſſion of ſome continuance, a great thinneſs ſucceeded to that very conſiderable thickneſs.

Theſe remarks, therefore, you may add to thoſe which I wrote to you at that time, upon the tumours of bones (*z*); and upon their ſtate of ſoftneſs (*a*): for by this means you will perceive, that ſome things are ſtill more confirm'd; and that others may be explain'd ſomewhat differently in different perſons; and be attended with circumſtances that are ſomewhat different.

5. Come, now let us go on, from tumours of the moſt hard parts, to conſider thoſe of the ſofteſt part; I mean, thoſe of the membrana adipoſa. And of this claſs of tumours, I happen'd to have the opportunity of examining two others, beſides thoſe which I have ſpoken to you of already (*b*).

6. An old woman had died in the hoſpital, about the time of beginning the public demonſtrations in anatomy, in the year 1755. The body being brought into the college; from the want of better ſubjects; when I examin'd it, and found that there was nothing known in regard to the patient, but that ſhe had died gradually; I obſerv'd; to omit other things, and among theſe the nails of the great toe of each foot growing out in the manner of a little horn, which paſs'd in a tortuous direction over two or three of the neareſt toes, and that on both ſides equally; I obſerv'd, I ſay, a hemiſpherical tumour to be protuberant from the anterior and middle part of the left thigh longitudinally: having a diameter which exceeded two inches; and being ſo ſoft, that it might have been taken for a melicerides.

The ſkin, in that part, was of the ſame colour as in other parts; nor had it any thing icteric in any part: but only a ſlight ſcabies appear'd. What this tumour contain'd, and in what manner the contents appear'd, I ſhall ſay, when I have told you what appearances were obſerv'd by inſpecting the viſcera.

In the belly, the inteſtines were in a lax ſtate, and among theſe the rectum; which was diſeas'd by reaſon of the hæmorrhoids being tumid internally: the ſpleen was ſomewhat larger than it naturally is: in the gall-bladder was a yellowiſh bile; and in this bile was a calculus of a ſpherical form, which exceeded even a very large filbert in its ſize, was black in its

(*y*) Epiſt. 50. n. 60.
(*z*) Ibid. n. 57. & ſeqq.
(*a*) Vid. etiam Epiſt. 58. n. 6. & ſeqq.
(*b*) Epiſt. 50. n. 22. & ſeq.

colour,

colour, but mark'd externally with a kind of thickiſh points, that were of a white colour degenerating into red, one of them being prominent.

You ſee now, why I remark'd above, that the woman was not of an icterical colour: you may therefore add this obſervation to the many others which I have formerly taken notice of to you (*c*). And that you may not complain of wanting the other circumſtances relative to this ſtone, take them as they follow: immediately after extraction, it was thrown into water moderately warm, but inſtantly went to the bottom; and being taken out from thence, was ſoon after laid on the top of the water very gently, but immediately ſubſided as before.

However, I inſpected it that very day, after it had been laid aſide for ſome time, and found that it had ſpontaneouſly ſeparated itſelf, in ſome meaſure, into a great number of black pieces: and taking theſe pieces, which were wrapp'd up in paper, again into my hands about forty days after, I laid many of the ſmall ones, and one of the largeſt, on the ſurface of water: at firſt they all ſwam thereon; but ſcarcely had a ſingle minute paſs'd, before the largeſt of them went to the bottom, and this was ſoon after follow'd by the reſt. Moveover this largeſt being extracted, and immediately laid upon the water, immediately ſubſided. One or two of thoſe which I had not put into the water, being applied to the flame of a candle, took flame indeed, but did not retain it, nor were melted, but ſmelt like burnt feathers.

Now let us attend to the appearances which were ſeen in one of the ovaria, in the tubes, and the uterus; which you may likewiſe add to other ſimilar diſeaſes that I have written of elſewhere.

The ovary was equal in ſize to a very large walnut, and was made up of white and thick membranes, including water. Both of the tubes were ſo confus'd with the broad ligaments of the uterus, that the greater extremity of them did not appear. The fundus uteri had, internally, on one ſide, two or three excreſcences; and on the other, the ſimple beginning of one only. All of theſe excreſcences, indeed, conſiſted of a white ſubſtance; but in the largeſt of them this ſubſtance was made up of white membranes, containing cells full of water. The figure of this was oval; being ſituated longitudinally, in reſpect of the uterus; to the internal coats of which, it was continu'd by a pretty broad peduncle, on the anterior ſurface of that cavity, though this peduncle was much narrower than itſelf. And on this anterior ſurface were the two other excreſcences; being continu'd to the ſame coat, not by a peduncle indeed, but by the whole of their baſes, depreſs'd in their figure, and not containing water.

In the thorax and the neck, for the head we did not touch, I obſerv'd two circumſtances that relate to the veſſels. The great artery, within the thorax, was diſtinguiſh'd by white ſpots internally, which evidently foretold that bony lamellæ would have been generated there, had the patient liv'd longer. And the external jugular vein, as it went down on the left ſide through the neck, was divided, in the middle of its courſe, into three parts; which, having made two iſlands, came together again into one tube, after having paſs'd down about three inches. But the latter of theſe appearances was rather rare than morbid; and the former is very frequent at ſuch a time of life.

(*c*) Epiſt. 37.

But

But now I at length return, according to my promiſe, to the tumour which, as I have ſaid, appear'd hemiſpherical before diſſection, and on the thigh reſembled a melicerides for this reaſon alſo, that it did not hang therefrom by a peduncle, but hid its other hemiſphere under the ſkin.

The ſkin therefore being cut into, it was evident to all who were preſent, that it was nothing elſe but an excreſcence, as I underſtand it, of the adipoſe membrane, For of this very membrane, diſpos'd into ſo many parallel parts as it were, was it entirely made up; and without any other difference than this, that the fat, which was in other parts ſomewhat brown, was more white in the tumour. However, there was not any other membrane under the ſkin, which comprehended the tumour in the manner of a cyſt; nor was there any thing like a partition under the tumour, which ſeparated it from the continued membrana adipoſa.

7. I will now deſcribe another tumour, but in fewer words than I did the former, as the obſervation was made while the patient was yet living.

8. An honeſt man, who liv'd in the country about Padua, had a tumour almoſt like a fig, of a conſiderable ſize, hanging from one of his thighs, by a ſhort peduncle, not thicker than a man's finger. The tumour was ſoft, ſo that if you handled it, you might perceive it was not a ſarcoma, nor yet diſtended by a great quantity of included humour.

The ſkin of it, which was of the ſame colour with the other parts, differ'd in this one circumſtance only, that it was ſeen to be unequal here and there with protuberances, which were of a hemiſpherical figure; but depreſs'd, and not thicker than the point of a man's little finger. The tumour had never any pulſation, and never was in pain, even when preſs'd: nor did it ever give him the leaſt uneaſineſs, unleſs when he was obliged to ride. For this ſole reaſon therefore, join'd with a fear, leſt it ſhould grow bigger and bigger every day; he came to me, and deſir'd to know, whether it might be cut away without danger.

Attending, therefore, to the circumſtances which I have ſpoken of, and not ſeeing any other veſſel paſſing through the ſkin of the tumour, but one vein; which did not, even at the upper part, reach to the diameter of a pigeon's quill; and calling to mind many ſucceſsful extirpations of this kind; I readily conſented that it ſhould be cut away; eſpecially as that very experienc'd man Jerom Vandelli, the public profeſſor of ſurgery in this univerſity, had undertaken to perform the operation.

And this he did with great ſucceſs, in the beginning of June in the year 1757, with the loſs of a very ſmall quantity of blood; notwithſtanding he had cut a little deeper than the beginning of the peduncle was: and a cicatrix being eaſily brought on, the man was perfectly cur'd within a ſhort time.

The tumour, which weigh'd about five ounces, being ſent to me on the ſame morning, by the ſon of Vandelli; who is worthy of his father, and his very learned uncles; and being immediately cut into, and examin'd by me, while he looked on, was found to be the very thing I had taken it to be; I mean, an excreſcence of the adipoſe membrane.

The peduncle of this tumour was of the ſame nature with the peduncle of another tumour, which I have deſcrib'd to you heretofore (*d*), as being

(*d*) Epiſt. 50. n. 23.

cut away by Valſalva; that is to ſay, it conſiſted of the ſame ſtructure, and ſubſtance, that the membrana adipoſa has in a ſound ſtate, contracted into a kind of cylinders, as it were, going down within the peduncle, and continued from thence within the tumour; being of a yellowiſh colour, ſoft, and unctuous, and making up the whole tumour, and even thoſe ſmall hemiſpherical bodies which protuberated externally. The parts of which they were compacted, not only adher'd to the ſkin tenaciouſly, but to one another alſo in ſeveral places; ſo that one part could not be ſeparated from the other by the fingers alone: yet there was no coat at all beſides the ſkin, which comprehended this tumour, in the manner we ſee in cyſtic tumours; nor could the ſkin itſelf be divided into two laminæ, notwithſtanding it was pretty thick. But under the ſkin, here and there, were ſmall ſanguiferous veſſels, eſpecially towards the upper parts.

9. Theſe tumours which have been examin'd, and cut into, by us, were ſmall indeed, if you compare them with thoſe large tumours, examples of which I have formerly referr'd to (*e*); particularly in Palfin; and which you may conſider alone, or in conjunction with ſtill larger tumours, of ſixty pounds weight, or more, the hiſtories of which have been added thereto by men of eminence (*f*). But as they are ſuppos'd to be ſimilar to thoſe which are call'd cyſtic tumours, and particularly to thoſe that are call'd *natte* in our language, you perceive that, notwithſtanding they contain'd fat, they muſt have been different from ours.

But now let us go on from theſe which are ſimple, and frequently of a conſiderable ſize, to others which are complex, and very ſmall; or at leaſt of a moderate ſize. And let us inſiſt, in ſome meaſure, upon thoſe whereof I ſpoke but little in the fiftieth letter; that is, of tumours which are form'd in the upper part of the tongue, and of others that grow almoſt in the whole of the body.

10. Of the tongues which I diſſected in the college, in the month of February, in this year 1759, there was one that was tumid: and in this the line which is called the linea mediana, at firſt ſubſided into the form of a conſiderable furrow, from the apex to the extent of a full inch, (which did not diſappear even when the tongue was drawn to each ſide) and at length was no more ſeen; and even the middle part, as well as the lateral parts, of that ſurface, was occupied by tubercles, diſpos'd in no regular order whatever; being low indeed, but thick to the extent of half a line of the inch of Bologna, of an unequal ſurface, and of a white colour, like the reſt of the tongue.

Theſe tubercles terminated near that part, where thoſe laſt thicker papillæ ſhould have been: the place of which was fill'd up by very ſmall, but very thick-ſet tubercles. After theſe at length ſucceeded the whole of that part wherein glands are wont to be prominent; but the ſurface was entirely without any trace of theſe glands, being quite even and ſmooth.

11. What had preceded to produce this ſtate of the tongue, and what inconvenience ſuch a ſtate had been the occaſion of, it was not in my power to learn.

(*e*) Ibid. n. 22. (*f*) Vid. in Italica Palfin. Edit. Part. 5. c. 4.

But on the contrary, after what ſymptoms, not a conſumption, but an enlargement of the glands began; and what ſymptoms it brought on; and the very ſpeedy production of new glands, as it were, both within, and without the body, in great part of it; appears from a hiſtory which ought not to be paſs'd over here; and which being communicated to me by Laurence Mariani, whom I have before commended, and by his ſon-in-law, who is worthy of him, Joſeph Boni, in the year 1752, was the more agreeable to me, becauſe, though I had an opportunity of examining a ſomewhat ſimilar diſeaſe, in former years, I nevertheleſs had no opportunity of diſſecting it, as I have told you when writing upon tumours (*g*).

12. A noble youth, of fifteen years of age, who had been healthy from his infancy, and was of a good colour, being receiv'd with a very ſevere chiding, and being ſo much the more ſtruck with fear therefrom, becauſe he was naturally thoughtful, paſs'd three days in a ſtupid ſtate as it were at that time; and three months after began to obſerve ſmall glands in his neck, which at firſt encreas'd gradually: but ſoon after the diſeaſe was ſo ſpeedily encreas'd, that, beſides a tumour of the ſalivary and axillary glands, in a ſhort time were obſerv'd throughout the back, and the breaſt, but particularly about the clavicles, prominent bodies, of the ſize of a pigeon's egg, and reſembling ſtrumous glands; tumours of which kind were not wanting ſoon after in the integuments of the abdomen alſo, and even, as was perceiv'd by the touch, in the cavity of the belly likewiſe.

They were all of them, in general, without pain; but that which lay upon the pectoral muſcle, and which was three inches long, and livid in its colour, was ſomewhat painful to the touch, as the interior parts of the belly alſo were; particularly on the left ſide, where a great tenſion and reſiſtance were perceiv'd.

Many remedies were made uſe of both internally and externally; and that in the beginning too, but ſtill more in the progreſs of the diſeaſe, when the moſt powerful medicines were preſcrib'd by the moſt ſkilful phyſicians in concert: but whether he made uſe of any, or none, the bulk of the tumours increas'd, and the diſeaſe had ſo rapid a courſe, that although it had begun only in the month of December, it finiſh'd its period in death about the end of May following.

Not long after the beginning of the diſeaſe, an acute pain had attack'd him in the knee, and in the leg; ſometimes in the right, ſometimes in the left; and with this pain he was always afflicted afterwards: ſymptomatic fevers, and fevers of an uncertain period, being added to it; and watchings, and waſting of fleſh attending thereon.

However, the patient was lively and chearful to the very laſt, had a good appetite for food, and even a keen ſenſation of hunger, but particularly on the laſt days of his life: and although there was ſome uneaſineſs about the throat, from a kind of mucous catarrh, which was eaſily thrown up, by means of a ſlight cough; yet no difficulty of breathing was ever obſerv'd: and this you will be much ſurpriz'd at, when you have read the diſſection of the thorax.

(*g*) Epiſt. 50. n. 28.. in fin.

The common integuments of the neck, breaſt, and abdomen, being cut into, it was found that thoſe external tumours had their ſeats in the cells of the membrana adipoſa; which was cloſely connected, in that part, to the ſubjected muſcles. All of them were full of a whitiſh matter, which was in part ſomewhat fluid; but, for the moſt part, ſolid, and ſebaceous. Some of the more prominent of them; as thoſe which adher'd to the pectoral muſcles, making one continu'd body with the axillary glands; when cut into diſcharg'd a yellowiſh and ſanious matter.

The belly being open'd, the whole of the omentum appear'd to be beſet, here and there, with hard little bodies, full of that whitiſh matter. The liver, the ſpleen, and the kidnies, were themſelves indeed in a natural ſtate; but about each of them the following circumſtances were obſerv'd.

To the right part of the liver, the peritonæum was ſtrongly connected: and being become one and the ſame ſubſtance, as it were, with the contiguous muſcles (in many places), after that grew out anteriorly, into a body of the bigneſs of a hen's egg; which, being fill'd up with that matter whereof I have ſpoken, was connected with the urinary bladder.

Near to the ſpleen alſo, the left part of the meſocolon was ſwell'd into a body which conſiſted of many pigeons eggs, as it were, connected together, and ſtuff'd up with that ſame matter: of which tumours the pancreas alſo was full: and ſtrumous ſwellings, of the ſame kind, were ſeen ſcatter'd up and down through the meſentery.

Finally, the tunica adipoſa of the kidnies was become thicken'd to a ſurprizing degree; for, on the part where it was turn'd towards the vertebræ, it was two inches thick: and on the oppoſite part five inches thick; being every where diſtended with the matter that I have ſpoken of: and, for that reaſon, the left kidney, with the addition of a hard and ſtrumous line, which interſected that matter, was about ſix-and-thirty ounces in weight.

Nor indeed were the inteſtines free from diſeaſe. For not only the adipoſe appendages of the colon, but the ligamentous bands which paſs through that inteſtine, were ſeen to be diſtinguiſh'd with little bodies of the ſame kind. And the ſmall inteſtines had the glands of Peyerus, in ſome places, of the figure and ſize of a lupin: and among theſe glands one that was much more large than the others, being affected with a phlogoſis, contain'd a corrupted humour.

The thorax being open'd, the mediaſtinum was ſeen to be frequently beſet with the bodies I have mention'd, about the middle of it; and among theſe with one not leſs large than a ſmall hen's egg, which was not only contiguous to the trunk of the aſpera arteria, but even compreſs'd it. The lungs were ſound internally, notwithſtanding to the external ſurface thereof were infixed hard, and ſtony globules, of the bigneſs of grains of barley.

The ſame ſurface was wholly hollow'd out on both ſides, on the back part; but particularly on the left ſide, by reaſon of ſtrumæ, of no inconſiderable ſize, which were form'd upon the pleura running into it; ſome near to the vertebræ dorſi, and others ſo diſpos'd into a kind of ſeries as it were, that one lay upon each rib regularly, from the lower part to the upper. The heart was in a natural ſtate, except that the external ſurface of the right

auricle was univerſally granulated as it were, from little bodies of a ſimilar nature.

Therefore (for thus was the hiſtory, which they ſent to me, concluded) the tumours we have deſcrib'd were, for the moſt part, encyſted, and turgid with tophaceous, hard, and, in a manner, ſebaceous particles, depoſited within the cells of the membrana adipoſa; beſides the equally hard glandular bodies, which are deſcrib'd.

13. I call'd this hiſtory to mind, when I lately read another of a black boy of ten years of age, which that excellent anatomiſt Meckel (*b*) has committed to print. For the early age of both the patients, and the keen hunger; join'd together with the diſeaſe, and conſtantly attending upon it; and the diffuſion of the diſorder even through the internal membranes; particularly of the belly, in the form of tubercles; the greater part of which was fill'd by a ſebaceous matter; theſe things, I ſay, make me wiſh that you ſhould compare both the hiſtories together.

And if, as you read, at the ſame time, the accurate obſervations of this very ingenious man upon that, and upon another black (*i*), as far as relates to their blackneſs alſo; you ſhould happen to be ſurpriz'd, that, in the diſſection of that apoplectic black, which I formerly ſent to you (*k*), and which was made fifty years ago at Venice; no remark was made in regard to the blackiſh, or brown parts, in the brain of theſe men, and none in regard to their black, rather than red blood; I would have you know that I had it not in my power to diſſect that body before night: and you know that the light of the ſun is one thing, and the light of candles another: and in like manner that I had it not in my power to preſerve any other part to the day following, but ſome ſegments of the cutis and cuticle; and what I happen'd to obſerve in theſe parts, I have ſhown in the Adverſaria (*l*). But of theſe things, and of the nature of the cuticle, neither is it the proper place to write here, nor doubtleſs ſhall I write, before I have ſome opportunity either of diſſecting a negro; or before I, at leaſt, know ſome things relative to the infants of theſe perſons, for a certainty; as, for inſtance, whether they have the beginning of the funiculus umbilicalis not like our children, ſurrounded with the cutis, which afterwards contracts itſelf into the navel; and whether, on thoſe few days after birth, when they firſt begin to grow brown, they have not the ſoles of the feet, and the palms of the hands, quite ſo white as we afterwards ſee them to be in adults; and other things of this kind. For now we muſt not digreſs from our purpoſe.

Comparing together, therefore, both the hiſtories of ſuch a number of ſebaceous tubercles; as you will ſee that they agree in this circumſtance alſo, of ſome of the viſcera, which were contain'd under a coat ſo diſeas'd, being nevertheleſs ſound; ſo you will obſerve them to differ not only in the ſymptoms, but in the ſeat of the tubercles, which was ſo far from being in the cellular ſubſtance, in the Berlin obſervation; as ſchirrhous corpuſcles alſo were in a certain hiſtory of Roederer (*); that they had this ſingular circum-

(*b*) Hiſt. de l'Acad. R. des Sc. de Berlin A. 1753.
(*i*) A. 1756.
(*k*) Epiſt. 5. n. 17.
(*l*) 11. Animad. 4.
(*) Diſſ. de Uteri Schirrho n. 18.

ſtance

ſtance in them; I mean, of adhering in the proper and firm membrane itſelf; of the peritonæum, or pleura, the cellular membrane being quite unaffected: and finally, that there were no tubercles externally, but all of them were internal.

But to external, and, at the ſame time, internal tumours, relates another obſervation, which Meckel ſpeaks of before the one I have already taken notice of; and which was made by himſelf, and the very celebrated profeſſor Zinnius, upon an infant, whoſe conglobate glands were ſchirrhous, in almoſt the whole of its body; beſides that ſome parts of the cerebrum were indurated.

14. But whether to both external and internal, or to external tumours only, which are what we chiefly attend to here, the examples that I ſhall immediately take notice of, are to be referr'd; ſome of theſe tumours either included ſuch contents as were evidently preternatural, or contain'd ſubſtances whereby they would ſcarcely, and indeed not at all, have ſeem'd to be different from the modification of ſound glands, if they did not occur in parts where we are not wont to ſee any manifeſt glands.

To the firſt of theſe kinds, beſides thoſe which we have juſt now produc'd, relate a conſiderable number of hiſtories, which are transferr'd into the Sepulchretum (*m*); ſo that when ſtrumous glands, eſpecially if in great number, or large, were protuberant externally, a great number were alſo found to exiſt internally; being ſeated not only on the meſentery, but alſo on the omentum, the ſtomach, the inteſtines, the pancreas, the urinary bladder, and the lungs, according to the obſervation of Fontanus (*n*); and according to the obſervation of Heurnius (*o*), even on the peritonæum, the liver, the ſpleen, the kidnies, the ligaments of the uterus, the diaphragm, the mediaſtinum, and the dura mater of the cerebrum itſelf.

I omit other leſs diffus'd glands, which you may ſee deſcrib'd there, and which were all ſtrumous: though ſome of them contain'd gypſeous, pultaceous, purulent, ſerous, white and yellow matter. And to theſe you may alſo add that great number of tubercles, which Laubius (*p*) ſaw in the lungs, full of a ſebaceous matter, ſimilar to that which was ſeen in the indurated glands of the neck of the ſame man.

But to the ſecond of theſe kinds, by reaſon of that opinion which M. Aurelius Severinus produces at the ſame time, of Aetius, and even of Leonida, I ſhould ſuppoſe thoſe glands to have belong'd, which Severinus himſelf (*q*) ſaw protuberating in the form of tubercles in the limbs, breaſt, back, under the arm-pits, and in the groins; more than ſixty of which, that were diſpers'd through the whole body of an old man, excited his admiration, on this account principally, that a great number of the tubercles were ſeen "about "places which are quite deſtitute of glands: it therefore brought into my mind," ſays he "that ſaying of Aetius, whereby he has pronounc'd, *Tetrab.* "4. cap. 5.... that white and red caruncles are, for the moſt part, form'd "in the body, entirely as new ſubſtances."

(*m*) L. 4. S. 2.
(*n*) Obſ. 6. §. 1.
(*o*) Ibid. §. 5.
(*p*) Act. N. C. Tom. 2. Obſ. 106.
(*q*) De Recond. Abſceſſ. Nat. l. 4. c. 5.

But

But Olaus Borrichius (*r*) having, in the diſſected legs of an icteric patient, lit on glands which were latent under the ſkin " in an infinite num-" ber;" did not ſuppoſe them to be new bodies; but ſuppos'd " that they are " ſo ſmall in the healthy body, as almoſt to eſcape the ſight; and that they " become more conſpicuous in the body when diſeas'd." Yet I can ſcarcely doubt but theſe may alſo be referr'd to the ſecond claſs.

And as to thoſe which Wharton ſaw in the arms and thighs of a ſoldier; as related in an obſervation that may be likewiſe read in the Sepulchretum (*s*); I know, for a certainty, that they ought to be referr'd to the ſame ſpecies. For as all of them were moveable under the ſkin, and when handled even with ſome conſiderable rudeneſs, were indolent, and did not yield to the moſt powerful remedies; and as he found a pretty large one, which had been extracted by a ſurgeon, to be " without any putrid or corrupt humour, " being made up altogether of a ſolid, glandulous, and white fleſh;" this very experienc'd inveſtigator of glands has not ſcrupled to pronounce, that in this manner " perfectly ſound glands are adventitiouſly produc'd; that is " to ſay, glands in every reſpect healthy, except that they are reckon'd in " the number of preternatural parts."

Theſe obſervations certainly relate to external glands, as thoſe of Anthony Cocchi (*t*) alſo do; where, ſpeaking of meſenteric diſeaſes, he ſays, that what Leonida had " ſeldom " ſeen, had more than once occurr'd to him (and it had " often " occurr'd to Severinus); I mean, that the external conglobated glands were not only encreas'd, but in a manner created as it were, in parts wherein they do not ſeem naturally to exiſt.

And indeed he moreover adds an example, wherein; beſides ſome which are not wont to be ſeen (as in the ſides), and which were fleſhy, and not fill'd with any purulency; he found others of the ſame kind within the belly. Which obſervation, as well as that of Severinus, as one that I have not yet met with in the Sepulchretum, you will add thereto. And at the ſame time farewel.

LETTER the SIXTY-NINTH

Relates to Blows and Wounds of the Head and Thorax; to Diſorders of the Joints, and to the Lues Venerea.

1. I HAVE not ſo much to ſay, at preſent, in relation to the diſorders compriz'd by me in the fifty-firſt letter, and the others which follow after, but that I can, finally, comprehend the whole of it in this one letter. To that letter therefore, in which I have written of wounds and blows of the head, you will add the following things.

(*r*) Sepulchr. S. 2. cit. Obſ. 17. §. 2.
(*s*) Ibid. Obſ. 15. in Append. ad §. 1.
(*t*) Dei Bagni di Piſa.

2. A man not yet fifty years of age, being much given to drinking, and intoxicated with liquor at the very time, fell down as he was going up ſtairs; and that ſo much the more eaſily, becauſe he was lame of one leg, and had been ſo for ſome years, from pains, which were commonly ſaid to have been the conſequence of the lues venerea.

In falling he receiv'd ſuch a blow on his left temple, that he immediately loſt all power of feeling and of moving; and in this manner he died within ſo ſhort a ſpace of time as four hours. The body of this man being conſign'd to the theatre, at a time which was very convenient for beginning the public demonſtrations in anatomy; that is, a little after the middle of January, in the year 1756; it was accurately diſſected there: and in the courſe of the diſſection we obſerv'd the following things.

In the belly, when open'd, the ſtomach was found to be ſtill greatly diſtended with bread and wine; ſo that he did not ſeem to have vomited at all, or at leaſt very little, in conſequence of the blow. After all theſe contents were exhauſted, not the leaſt appearance of rugæ was ſeen on the internal ſurface of that viſcus.

The liver and the ſpleen were large, yet not morbid; except that the ſubſtance of the ſpleen, when cut into, ſeem'd to me to be pretty lax, and the colour of it dilute. But both of the kidnies were hollow'd out by a great number of hydatids; which, beginning under their very coat, reach'd ſo far, as to be contiguous to the tubuli that receive the papillæ; being of an unequal ſurface internally, but comprehended every where in their own proper membrane.

The urinary bladder was larger than it generally is; particularly in reſpect of length; ſo as to be almoſt twice as long as it is in common. Theſe appearances, however, in the body of a man ſo much given to drinking, were not to be wonder'd at.

But whether that which I obſerv'd in the ſeminal caruncle, related to the lues venerea, or had been ſo from the original formation, I would not readily take upon me to determine. The ſinus which is in that caruncle, had its orifice in the moſt dilated ſtate I ever remember to have ſeen it in; and was not plac'd in a longitudinal direction, but in a tranſverſe, which I never ſaw before in any body.

Yet the ſemen expreſs'd from the veſiculæ, did not come out through that orifice, but by the two apertures which are on the ſides of it; as is uſual in other bodies.

The internal ſurface of the aorta, oppoſite to the orifice of the cæliac artery, was not ſmooth; as it likewiſe was not in other places throughout the belly; and even in that part ſhow'd two bony ſcales.

In the thorax alſo, the ſame great artery had a like diſorder within, but particularly near to its valves; two of which were not free from oſſification. And above them; although the heart was of a moderate ſize; the larger ſinus of Valſalva was wider than it naturally is. And theſe appearances were morbid.

However, this which follows, and which I do not remember to have ſeen on any other occaſion, was from nature. The right ſubclavian vein conſiſted of two, which, beginning in the axillary, did not join into one tube, before they

they had come near to the orifice of the internal jugular; and an insula of five inches in length had been form'd.

These two veins which comprehended the insula betwixt them, were both of equal thickness: and, on the left side, in the axillary vein, was an insula also, though much shorter than the former; not being two inches in length, and not comprehended betwixt veins of equal size; the one, for instance, being much more slender than the other.

Before I speak of the head, it is necessary to interpose a few things, some of which I am unwilling to omit in the present place, and others I cannot omit. Although there was a considerable quantity of fat on the abdomen, and within the abdomen; yet in the neck, back, and loins, there was not so much; but in so unusual a manner did it adhere to the superficies of the muscles, and of the fasciculi of which the muscles are made up, and was even fix'd thereto, that it gave considerable trouble to those who dissected them.

When we came to the lower limbs, in that which was sound, a circumstance happen'd to me which is very rare; I mean that, in regard to the posterior crural nerve, having introduc'd the handle of the knife, or my hand; according to my usual custom; betwixt the two branches into which it at length is seen to be divided in the ham, I could not by going upwards, confirm what is generally the case, that it is not one, but is made up of two, through the whole course of the thigh; and even sometimes above that also: for, although they did cohere together indeed, yet they in fact never coalesc'd into one body.

But when I cut into them longitudinally; which I have been wont to do in each of them, or at least in the larger, in order to demonstrate the parallel fibres, of which it consists; I was surpriz'd to see so much fat interpos'd betwixt them, that the nerve seem'd, every where, to contain more of this substance, than of fibres.

For although it is many years ago, since I have frequently observ'd, that an evident pinguedinous substance is interpos'd betwixt these fibres in bodies that are pretty fat; contrary to what is believ'd by many, and particularly by those who chuse to compare the nerves to tight musical chords; I had, however, never before seen it interpos'd in that quantity which I then saw it in: nor had ever it come into my mind, to suppose it possible, as you easily conceive, that if any other substance be collected here, in a preternatural manner, in the place of fat, those disorders which they impute to obstructed, or otherwise vitiated, nervous fibres, must arise from thence. This limb however was sound, as I have said.

But the other, of which the man had been lame, was so drawn up, that the leg could not be extended, by any force of the hands which might be applied. Nor could it be perfectly extended; although it was then extended somewhat more easily; when the tendons of the flexor muscles, which were very tight in the ham, were cut through in a transverse direction; and neither these muscles, nor the extensors, were of a red colour, like the rest, but of a brown and almost dirty colour.

And, indeed, the colour of the very small quantity of mucilage, which was in that knee, differ'd from the natural appearance: the mucilaginous gland was larger than usual, and appear'd like a white and hardish substance

of a pinguedinous nature. But almoſt all theſe circumſtances ſeem'd to have been owing to the ceſſation of motion in thoſe muſcles, and in that joint.

Finally, in diſſecting the head, I ſaw the temporal muſcle, which had been contus'd by the blow, to be tumid and black, by reaſon of the blood ſtagnating in it, and relaxing its internal ſtructure. But the cranium I did not find to be injur'd in that part, nor in any other, by fracture, or by fiſſure; nor even by depreſſion.

The veſſels which creep through the pia mater, were here and there ſeen to be very turgid with blood however, which was very black; and a coagulum, of no inconſiderable ſize, was form'd above that membrane, from blood which had been extravaſated there. Of this extravaſation therefore, and of the concuſſion which the brain had receiv'd, his death had been the very ſpeedy effect.

3. This hiſtory you will add to the others, which I wrote in the beginning of the fifty-firſt and fifty-ſecond letters; and which ſhow the cranium to have been unhurt in like manner, from blows, but not the parts which lie under the cranium; although in none of them did ſo ſpeedy adeath follow. Now take one which you may add to another deſcrib'd in the following fifty-third letter (*a*). For it is the ſecond caſe, wherein I met with a wound of the heart. Thus we ſhall paſs on from one principal viſcus, the cerebrum, to another principal viſcus, the heart; and from a caſe of ſpeedy death, to an example of the moſt ſpeedy that can be conceiv'd.

4. A ſhoemaker, of about forty years of age, going up ſtairs, was met by his enemy who was coming down: this enemy thruſt a knife into his breaſt, and immediately fled. He, however, crying out that he was wounded, and drawing back the knife from the wound, died ſo ſuddenly, on that very ſpot where he receiv'd the wound, that thoſe perſons who ran to him immediately upon hearing the alarm, did not find him alive.

The body of this man was obtain'd, without difficulty, by the ſtudents: and they took care it ſhould be brought to me, who was then teaching anatomy in the college; it being the month of January, in the year 1753.

The body was of a large ſize, and of a ſound habit; ſo that if it had not been ſomewhat more fat than we could have wiſh'd, a better ſubject for obſervation, and demonſtration, could not be deſir'd; and both of theſe circumſtances were ſtrictly and accurately attended to by me: although I ſhall take notice of nothing here, but ſuch things as relate to the wound, and to the blows receiv'd in falling.

The wound therefore; which was inflicted at a very ſmall diſtance from the left ſide of the ſternum, betwixt the cartilages of the third and fourth rib; was ſcarcely longer externally, than half an inch of the foot of Bologna: it had paſs'd from thence through the mediaſtinum, and the pericardium, to the right ventricle of the heart, and had pierc'd through the paries thereof very near to the ſeptum, in almoſt a middle ſituation betwixt the baſis and the apex; not being more than three lines in length in that part.

The pericardium, therefore, we had found to be diſtended with black and grumous blood: and the anterior part of the mediaſtinum, where the wound

(*a*) N. 26.

had paſs'd through, and above, and below, to a conſiderable extent, we found to be blackiſh, and in a manner turgid, from blood; but there was no blood in the ventricles of the heart, nor in its auricles. Nor was there any other injury beſides theſe within the thorax.

But externally, in the upper part of the back, were traces of a contuſion; which extended themſelves quite from the ſkin into the fat, that is interpos'd betwixt the round muſcles of both the ſcapulæ.

The integuments of the head, alſo, preſerv'd ſome marks of contuſion in the forehead, which, I ſuppoſe, had been got in the fall; as I believe, that he had, at length, lain in ſuch a manner on the ſtairs, on the ſteps of which he had again fallen, in endeavouring to riſe, that it was much more eaſy for the blood to flow into the head, than into the oppoſite part: at leaſt the veſſels which were below the heart, contain'd a very ſmall quantity of blood; and thoſe that were above, a very large quantity.

The ſurface of the brain, therefore, was red from a diſtenſion of the veſſels which paſs through the pia mater; and from a diſtenſion of their ſmall branches, which was ſo great as to reſemble an injection of red matter. Nor did thoſe veſſels, which appear within the medullary ſubſtance, at other times, like threads, appear to be leſs full; for it was here evident, to every one, that they were hollow tubuli.

5. If you compare this wound of the heart, with that which I have deſcrib'd to you in the fifty-third letter (*b*); from the obſervation of Valſalva; and obſerve that both of them penetrated into the cavity of the ſame, that is of the right, ventricle; and that by an almoſt ſimilar fiſſure which was open'd in its paries; you will perhaps be ſurpriz'd, that the man, whoſe hiſtory is, given by Valſalva, did not die till the eighth day; and that this man was ſo ſoon kill'd by his wound: eſpecially as ſo great a quantity of blood was found to have been effus'd into the thorax and belly by the former.

However, you will, I ſuppoſe, naturally imagine, that this difference aroſe, on account of that very extravaſation of the blood; which flow'd, not only on the outſide of the heart, but on the outſide of the pericardium: for it could not ſtagnate betwixt the pericardium and the heart; as in our obſervation; and thereby diſtend the former, and preſs upon the latter.

And if you do this, you will, from comparing together both theſe obſervations, have wherefrom to confirm that which we have, in a former letter (*c*), plac'd among the other cauſes, why a hæmorrhage within the pericardium brings on death far ſooner than when it happens in moſt other places, even though it be far leſs conſiderable.

6. I have ſaid, that when it happens in moſt other places; and I have ſaid, in like manner, among other cauſes; as I am not ignorant, how ſpeedily even a ſmall quantity of blood, effus'd within the cranium, or a great quantity, but even when extravaſated within the belly itſelf, is wont to kill perſons thus affected; as for inſtance, from a ruptur'd ſpleen, which you will learn from many of thoſe obſervations, that I have pointed out to you, when I was treating of wounds in the belly (*d*), that you might have an opportunity of reading them over.

(*b*) N. 3.
(*c*) Epiſt. 26. n. 18.
(*d*) Epiſt. 54. n. 5.

And

And if among theſe, I ſhould have happen'd to omit thoſe, which are propos'd by Michael Vanſelowius (*e*), or by J. Valentine Scheidius (*f*) (for I am not at leiſure to look back again to every article) I would have you turn to them, and you will then be the more convinc'd that what I advance is conſiſtent.

7. And the calling to mind theſe obſervations would certainly have been very opportune, in order to admoniſh me to add, on the preſent occaſion, any thing which I might have lit on in the mean time; by reading, or by diſſection; that related to thoſe things which I then wrote of at large. But as nothing at preſent occurs to me, either on theſe ſubjects, or on ulcers, I ſhall paſs on to thoſe things which relate to diſorders of the joints, that are injurious to motion. For there are ſome of theſe which I have either ſeen myſelf, ſince I ſent you the fifty-ſixth letter, or have read of, as they were ſeen by others. To the firſt claſs belong the two following hiſtories.

8. There was an old man at Padua, of whom I heard, after the diſſection; and that from thoſe who had been familiarly converſant with him for a long time; that he could not have inclin'd his head to one ſide without difficulty. This man, having died in the hoſpital, in the beginning of March, in the year 1755, of a catarrh; as was ſaid; gave me an occaſion of obſerving the following things; as I was at that time demonſtrating ſome circumſtances relative to the anatomy of the head, neck, and thorax.

The thorax being open'd, one pretty large, and one rather ſmall, hydatid was found on the anterior ſurface of the right lobe of the lungs.

The head, when cut into, ſhow'd water within the cranium; and a part of this was found in the lateral ventricles. The pineal gland was ſlender.

As the ſmall muſcles which are interpos'd, anteriorly, betwixt the firſt vertebra colli and the head, ſcarcely, and indeed not at all, appear'd; and this did not ſeem to me to be imputable to the very bad, that is, to the very lax, ſtate of them, which was to be obſerv'd in the other muſcles alſo; upon examining the matter more attentively, and inquiring into it more deeply, I lit on that circumſtance, on account of which I was willing to write this obſervation to you.

That is to ſay, not only what had occurr'd to Columbus (*g*), when he ſaid, "I have ſeen the firſt vertebra adhering to the os occipitis, in ſuch a "manner, that it could not be mov'd by any means," was here alſo; but, beſides this, an adheſion of ſuch a kind was ſeen on the left, and particularly on the anterior ſide, that this vertebra and the os occipitis were one and the ſame bone: and that this had exiſted from the original conformation, was ſhown by many neighbouring diſorders in the ſtructure.

For the ſecond vertebra had its body, I do not ſay grown into one ſubſtance with the third; though there was no trace of diviſion (but only a ſlight appearance of a diviſion having ſubſiſted in ſome former time) any more than there was betwixt the firſt vertebra and the os occipitis, as I have ſaid; had its body, I ſay, and the dentoid proceſs, nearer to the right ſide of the head

(*e*) Diſp. exhib. Hiſt. de Ruptura Lien.
(*f*) Obſervat. Lienum Diſrupt.
(*g*) De Re Anat. l. 15.

than to the left: this proceſs was ſhorter than uſual alſo; and as to the proceſſes that are call'd the ſuperior oblique, on the whole of that ſurface where they receiv'd the inferior proceſſes of the firſt vertebra; which here perform'd the office of the condyles of the os occipitis; they were by no means ſimilar to each other; as that on the right ſide was more confin'd than the left, went up higher, and was inclin'd forwards, rather than backwards.

There are other circumſtances alſo, which I the more readily paſs over for the ſake of brevity, becauſe, whenever you come to Padua, you may ſee theſe bones, as I keep them by me. But the ligaments, which I could not preſerve in the ſtate they were found, I will not omit to deſcribe.

The tranſverſe ligament, as it is call'd, embrac'd the whole of the dentoid proceſs on the back-part, except at the lower part, from whence the lateral ligaments aroſe in a longer and more ſlender ſtate than uſual; but eſpecially that on the right ſide. Yet from the left, and upper ſide, as it were, of the dentoid proceſs, a kind of very ſhort, and pretty thick ligament proceeded.

9. But you will remember, that other diſorders of the ligaments I juſt now ſpoke of, have been deſcrib'd in one or two of the preceding letters (*b*); although it did not ſeem that thoſe were to be conſider'd as the effects of original conformation, as theſe are. But you will remember ſtill more, becauſe it has been frequently done, that, when mention is made of lameneſs, among other cauſes diſorders are deſcrib'd in that joint, which is interpos'd betwixt the head of the femur and the acetabulum of the os innominatum. And to this claſs will belong the following hiſtory; which contains ſome peculiar circumſtances that you have not read of in other writings.

10. A woman, of threeſcore-and-ſeventeen years of age, had been born healthy and ſound, and had liv'd in that ſtate ſome time, ſo as to have been happily deliver'd of a ſon. But at the ſecond time of child-bearing, which was a very difficult one, having brought forth a daughter (who related theſe circumſtances) ſhe began to be ſeiz'd with pains about the iſchiadic region on the right ſide, and to be lame.

Theſe diſorders could not be at all reliev'd, either by nature or by art; notwithſtanding her third and fourth time of child-bearing were happy; and indeed ſhe often fell down, becauſe the right limb did not bear the weight of her body with ſufficient firmneſs.

At length being admitted into the hoſpital; more on account of her poverty, than her diſeaſe; ſhe there lay in bed a year and ſome months, for this reaſon, that if ſhe attempted to riſe, her pains were exaſperated. Her appetite for food being very conſiderable, but her ſtrength nevertheleſs gradually failing her; and ſhe being now and then delirious; ſhe at length died in a gradual manner, about the beginning of the year 1754.

Some parts of this emaciated body were not without their uſe to us, as we were then taking notice of, and demonſtrating, many and various circumſtances.

For the cerebrum, the cerebellum, and the medulla oblongata, were in a pretty firm ſtate: and although a ſmall quantity of limpid water was contain'd in the lateral ventricles, yet the plexus choroides were red; nor did the pia

(*b*) Epiſt. 62. n. 11. & Epiſt. 63. n. 19.

mater

mater eaſily follow the hand which drew it: and from hence we may pretty fairly conclude, that this water had not been long within the cranium.

And although I likewiſe ſaw the uterus to be inclin'd to the ſame ſide, on which this woman had been lame, and to be attended with ovaries, which were very much contracted; yet it was proper enough for the demonſtration of other things; and amongſt the reſt, for admoniſhing the ſtudents, that they ſhould not, from what I had ſaid formerly in comparing the ſituation of the oſculum uteri of a cow with that of a woman, in the firſt of the Adverſaria (*i*), ſuppoſe me to deny, that the corona of this oſculum, when in a natural ſtate in women, deſcends more on the anterior than on the poſterior part, or at leaſt in ſome degree; although not always ſo much as the figures of Euſtachius (*k*), when compar'd one with another, repreſent.

I laſt of all examin'd the joint of the right thigh, together with its acetabulum: and as I ſuppos'd I ſhould find a very conſiderable diſeaſe, by reaſon of that part being enormouſly protuberant outwards, in the ſide; ſo, ſoon after, when the diſſection was perform'd, I found not only one, but many conſiderable diſeaſes; and that I might be the better able to judge of them by compariſon, I firſt laid bare the upper part of both the oſſa femoris, and the inferior part of both the oſſa innominata.

The os innominatum on the right ſide then, whether you look'd upon its external or its internal ſurface, you ſaw to be extended into a larger circle laterally than the left, and found the acetabulum to be comprehended in thicker parietes, externally, than uſual.

And this right acetabulum had a larger orifice than the left; nor was the ſupercilium thereof, as it is call'd, of a flexible nature, but bony: and as the left correſponded to the head of a ſound thigh-bone, in its figure and dimenſions, ſo this exactly correſponded to the head of a thigh-bone, which was alter'd, by diſeaſe, from its natural figure and dimenſions. For the form of this head was not hemiſpherical, but conical.

The baſis of the cone on the external ſide, began at the very roots of the larger trochanter; whereas on the internal ſide, it was diſtant, by a conſiderable interval, from the leſſer trochanter. The figure of the right acetabulum, therefore, was the ſame with that of a hollow cone: and the depth of it from the external ſide was very great; ſo as to be almoſt twice as deep there as on the left ſide: and as to the mucilaginous gland; which ſeem'd to be larger than it generally is, on the left ſide, and to be prominent out of its cavity, as it were; there were ſcarcely any appearances of this gland, or its cavity, and indeed none at all in the right ſide.

And even the cartilaginous cruſt, which inveſted both the ſurface of the acetabulum, and the head of the os femoris, and was white and ſhining on the left ſide, was ſeen to be brown, and of a pale colour on the right ſide; and to be, moreover, red in ſeveral places.

Having ſufficiently examin'd all theſe things, and, at the ſame time, obſerv'd how flaccid the ligamentum teres, as it is call'd, of the head of the femur on the right ſide, was; I then order'd the ſame head to be cut with a ſaw; paſſing the inſtrument through its axis from the vertex to the baſis;

(*i*) N. 15. (*k*) Tab. 14. Fig. 3 & 4.

and the ſection to be carried on into the neighbouring part of the femur alſo: and this that I might ſee what difference there was betwixt the two parts internally. This difference was very manifeſt.

For although this part, and that head, were ſeen to be every where cover'd with their firm bony lamina; yet the marrow which this neighbouring part of the os femoris contain'd, and that which the head contain'd within its cancelli, were evidently of a different nature: for the marrow in the head was of a white colour inclining to yellow, and when you preſs'd it betwixt your fingers, more of a watry than of an oily nature; whereas in that part of the thigh-bone it inclin'd more to redneſs, and was of an oily nature.

Finally, when I compar'd both the oſſa femoris together, it ſeem'd well worth while to take notice of that part which was under the trochanters, at ſome little diſtance, not only in reſpect to its figure; which being very different from that of a round body, came very near to the ſhape of an angular body; but alſo in reſpect to its incurvation in the form of the ſegment of an arch, which had its convex part looking forwards: this incurvation, however, was greater in the left femur than in the right; and that you would eaſily conceive, if the pains and lameneſs had exiſted at the time, in which the bones, being ſtill flexible, would yield more to the weight of the body in that limb, on which ſhe, when a little girl, was accuſtom'd to ſupport herſelf the moſt; and this in conſequence of its being more firm, and giving leſs occaſion to pain, than the other.

11. How is it then? Did not the daughter give us a true relation? or did the mother go lame, in a ſmall degree, from the beginning, and when ſhe was in the flower of her youth, having been born with ſome of the diſeaſes of that ſtructure which I have deſcrib'd? And when from a very difficult birth; from which cauſe I have already taken notice (*l*), that lameneſs has happen'd to others in different ways; a new cauſe was added to the diſorder of the ſtructure, did the ſevere pains, and the very manifeſt lameneſs then in fact come on? And did the mother, as the manner of women is, chooſe to have it ſuppos'd, that her diſorder had taken its origin from thence; as if by misfortune; rather than that it had exiſted from the birth?

Certainly no perſon can readily ſuppoſe, that all theſe changes, and all the changes of that kind which were found by me, had happen'd in the bones of an adult woman, and one who was the mother of two children; eſpecially as he will obſerve, that the humour which he may ſuppoſe to have been depoſited there, and to have created iſchiadic pains, was not endow'd with ſuch an acrimonious property, as I very evidently knew it to be in another lame woman, who was afflicted with iſchiadic pains (*m*): and that from the eroſion of the cartilage which cover'd the head of the femur, and from the bloody ſurface of the acetabulum.

Yet I would wiſh you to read that hiſtory over again if you pleaſe, and join it to this, or if you chooſe rather to thoſe alſo, wherein I have deſcrib'd

(*l*) Epiſt. 48. n. 32. (*m*) Epiſt. 57. n. 2.

a lameneſs

a lameneſs and an inclination of the uterus at the ſame time (*n*); as I have in the preſent.

12. Thus far what I myſelf ſaw: now attend to ſome things which I have lit upon in the mean time by reading; and which have been both ſeen and remark'd by others, in regard to the diſorders of the joints; ſuch as anchyloſis, arthritis, and other morbid affections, which are touch'd upon in the obſervations produc'd, or taken notice of by me juſt now, or at other times.

Not to refer you to many; turn to that one diſſertation which I alſo commended in the former letter (*o*); I mean, the diſſertation of Reimarus (*p*). As to what relates to the anchyloſis, he firſt tells you (*q*) what the celebrated John Hunter ſaw, at London, in a thigh-bone which had not been long broken; that is to ſay, the callus, which was interpos'd betwixt the two extremities, was yet ſoft, and the bony fibres ſhot from both of theſe extremities; the ſmall ſanguiferous veſſels evidently proceeding from the meditullium of the bone, and being produc'd within the callus.

And Reimarus obſerves from hence, that if the cruſt of bones, which are brought together in order to form a joint, be injur'd, the fibres and veſſels may ſhoot forth on each ſide, and be join'd with the oppoſite fibres and veſſels, ſo as to produce that diſorder which is call'd the true anchyloſis, and is incurable.

But as to that appearance which he ſaw in the diſſection of a boy's knee (*r*); and which was produc'd by a kind of membrane, "ſuch as we generally "ſee generated by inflammation, in the thorax, and in other parts;" connecting the extreme cartilages of the oppoſite parts; he not only does not doubt but this may be cur'd, but even thinks it may happen, that by a ſudden force accidentally applied; as, for inſtance, in falling, or in the extenſion or flexion of a rigid joint; a coheſion of this kind may be broken thro': and by this hypotheſis he happily explains a certain obſervation of Meekrenius, which is otherwiſe not eaſily to be underſtood.

And you, perhaps, will think, that certain ſudden cures of an adventitious inflexibility of the joints, are to be referr'd to the ſame claſs; cures, for inſtance, that have been brought about by a ſtrong flexion of the ſubjected limb, being made by the ſurgeons; or, on the contrary, if the limb cannot be extended of itſelf, by a ſtrong extenſion; and that from hence we are to account for the cracking noiſe which is then heard: that is, from the rupture of a membrane of this kind, which is now pretty firm; and not from the rupture of any other part.

For which reaſon it were the more to be wiſh'd, that the ſigns of an anchyloſis, produc'd by this membrane, were known: for if this membrane has true veſſels; in the ſame manner as ſome of thoſe membranes, whereby the lungs are connected to the pleura; it is natural to ſuppoſe, that, within the joint alſo, as well as in the thorax, ſome injury had formerly preceded, and that from thence the fibres and veſſels might ſhoot out in the manner we

(*n*) Epiſt. 48. n. 32. & ſeqq.
(*o*) n. 4.
(*p*) De Fungo Articul.
(*q*) § 61.
(*r*) §. 45.

have ſaid of the extremities of broken bones; though in the caſe ſpoken of at preſent, the fibres and veſſels would be of a membranous nature.

13. But in regard to other diſeaſes of the joints; as I have already ſufficiently, though briefly, in that letter wherein I have ſaid this diſſertation is commended, pointed out how many various obſervations occur in the ſame diſſertation; I will here touch only upon thoſe things that relate to a diſeaſe, which is, as Reimarus himſelf acknowledges (*s*), "ſingular;" I mean to globules, internally bony, and externally cartilaginous, which I accurately deſcrib'd to you in the fifty-ſeventh letter (*t*), as I had found them within the knee of an old woman.

In England, where a diſeaſe ſo rare amongſt us, is not unuſual; ſo that the common People call the diſorder, "mice in the knee;" he ſaw, heard, and read, many examples of the ſame kind.

Theſe bodies are moveable to and fro, through the cavity of that joint, with great freedom; inſomuch that in no more than one inſtance, as far as could be diſtinguiſh'd without diſſection, "the globular body ſeem'd to "adhere, in a manner, to ſome one of the ligaments, ſo that it could not "wander through the whole joint."

They may be forc'd accidentally, or by the application of the hand, into thoſe parts of the joint where they can neither be injurious to motion, nor create pains. And in theſe parts they could, ſometimes, be ſo retain'd, by means of remedies externally applied; and the application of bandages; that they did not even fall out therefrom, after the diſcontinuation of ſuch aſſiſtances.

But the impediment to motion, which others perceiv'd therefrom, or the pain which troubled them whenever they attempted to move the joint, oblig'd them to have recourſe to ſurgeons; who, by cutting into the parietes of the joint, took them out: and this ſometimes with good ſucceſs; but at other times; by reaſon of the ſymptoms, which may ſucceed to ſuch inciſions into the cavities of joints, and which this diligent author (*u*) even obſerv'd to have follow'd, more than once; with an event truly fatal.

And in regard to the origin of theſe corpuſcles, although he produces two examples, from whence it may ſeem, that they are little pieces of bones, which have been torn off from the extremities of the bones, by the application of ſome accidental force; yet as they are ſeen to be every where "in-"veſted with a ſmooth cartilage," and the diſeaſe has not always been preceded by the application of external force; he prudently confeſſes that nothing certain can be determin'd by him, before the examination of a great number of freſh inſtances.

I therefore am not ſorry, for having written to you, not only what I myſelf ſaw formerly, but alſo what his illuſtrious preceptor Haller had ſeen.

For the very learned Reimarus forgets; as is frequently the caſe; when he aſſerts that no examples were known to him, of this diſorder attacking any other joint but the knee; he forgets, I ſay, the obſervation of Haller,

(*s*) §. 54. & ſeqq.
(*t*) n. 14.
(*u*) §. 26. & ſeqq.

who

who found this diſeaſe in the articulation of the jaw; and found the cartilages of that joint to be partly conſum'd at the ſame time: ſome of which I alſo, at that time, ſaw to be cut into furrows, and extenuated, and yet not ſo much as was neceſſary in order to form many fewer little bodies than I met with; for there were not twenty, as in the obſervation of Haller, but more; and among theſe were five of ſuch a magnitude, as to be equal to ſmall grapes: and all of theſe bodies found by both of us, were in the form of globules; whereas Reimarus ſpeaks only of one, or at moſt of two, and does not mention any thing of the magnitude, or the figure of them, except that one was "nearly equal to a kind of horſe-pea in its bulk."

And it has happen'd to me, in particular, not to find all of them cover'd with a cartilaginous cruſt, but many of them entirely bony: yet I found none of them looſe, but all of them continu'd from the cartilages, or rather from the mucilaginous glands; although I perceiv'd that it might happen, without any great difficulty (*x*), for ſome of them to be pull'd away from thence, in the various motions of the knee.

Conſider then, whether theſe things which I have ſaid; not for the ſake of repetition, but for the ſake of compariſon; may be of any uſe (when join'd to the examples of Reimarus) to help us out in ſome conjectures upon the origin of this diſeaſe; to confirm theſe conjectures, or, in the mean while, to ſet them aſide.

14. Nor muſt we omit, on the preſent occaſion, that obſervation which the ſame reſpectable author refers to, as made by him, together with the celebrated Gaubius (*y*): for it relates to diſeaſes of the joints; and even to that which is nam'd from the joints: I mean, the arthritis, or gout. That is to ſay, in a man; who, having labour'd under the gout in his feet, had died aſthmatic on the going off of this paroxyſm; they found here and there, within the lungs, "a white matter, reſembling, in ſome parts of it, a pretty "thick and gypſeous nature."

And in reading of this, you will naturally call to mind what I have written to you on the ſubject of arthritic matter (*z*); either when deſerting the joints, it falls upon other parts, or, on the other hand, when it is opportunely eliminated from the body; as, for inſtance, by the inteſtines; which I have ſaid was ſeen by Albertini, "in the form of a kind of calx, "or gypſum, lately condens'd together;" or by the urinary paſſages; a remarkable hiſtory of which kind you have, as publiſh'd by the Royal Academy of Sciences at Paris (*a*); of a man, that is to ſay, who having begun to be attack'd, at intervals, by ſlight arthritic paroxyſms, was freed from the much more violent return thereof, as was ſuppos'd, by the diſcharge of a milky urine, for about the ſpace of nine months ſucceſſively; an argillaceous matter ſubſiding therein, ſoon after its excretion, and within an hour or two coming to the hardneſs of a perfect gypſum.

But if it be not diſcharg'd, and yet cannot fall upon the joints; or at leaſt does not continue to fall thereon; what fatal diſorders it brings after it, I have not only already ſhown by the example of the moſt eminent car-

(*x*) n. 15.
(*y*) in notula *a* ad §. 40.
(*z*) Epiſt. 57. n. 9.
(*a*) Hiſt. A. 1747. Obſ. Anat. 3.

dinal C[illegible]eli (*b*), but could alſo now confirm, by the example of another very eminent cardinal; and even by that of the auguſt emperor Charles the ſeventh, as ſpoken of by that celebrated man Jo. Godofr. de Hahn (*c*); if it were not my determination by no means to inſiſt here, upon any other hiſtories of arthritic patients; but to add ſomething upon a far different kind of diſeaſe.

Nevertheleſs, it will not be without its uſe, for you to compare both the examples given by de Hahn (*c*), with what I have ſaid in regard to the cardinal Corneli; for in the firſt of them you will find the conſtitution of body, and at leaſt the ſuſpicion of a calculus in the gall-bladder: in the other there was a calculus of the kidnies; and in both of them you will find ſome ſymptoms that relate to the thorax and head, which you may alſo obſerve in our caſe of the cardinal.

15. You will eaſily remember, that when I ſent to you my letter upon the lues venerea; that is, the fifty-eighth letter; I had written the fewer obſervations therein, becauſe I had before ſent many, at different times, in other letters, on occaſion of various diſeaſes wherewith that lues was join'd; which obſervations I particularly referr'd to in that letter (*d*), and at the beginning thereof. To thoſe you will now add others; and eſpecially that, which, in writing of the aphonia (*e*), I did not omit, though it related, at the ſame time, to diſorders brought on the male urethra by a virulent gonorrhœa.

And what diſorders have been ſeen to be produc'd, in the genital parts of women, from that lues, by the celebrated Roederer, you will learn from his diſſertation *de Uteri Scirrho* (*f*); which had not as yet come out, when I firſt wrote; and what miſchiefs have occurr'd to me therefrom, you will ſee by this obſervation of mine, which I had not made at that time of writing.

16. It was certain in regard to a woman of a middle age, that ſhe had been affected with an œdematous ſwelling of the legs, which had afterwards diſappear'd; but by what diſeaſe ſhe had been chiefly carried off, was unknown. There was no doubt, however, but ſhe had labour'd under a lues venerea. As this body was diſſected by me before the middle of March, in the year 1754; and that in the hoſpital; in order to examine and demonſtrate the natural ſtate, and ſtructure, of ſome of the parts; I obſerv'd the following things to be quite contrary to the uſual appearances of nature.

The thorax indeed contain'd ſome water; but the cranium, and the ventricles of the cerebrum, and the cavity of the ſpine, contain'd more.

In the cavity of the belly, the uterus was found to be very much inclin'd to the left ſide. And on the ſide of inclination, I could find no traces of the extremity of the tube, though I enquir'd very attentively. For the tube, as far as I could ſee, was not hollow, but ſolid; and had ſcarcely paſs'd to the extent of three fingers breadths from the uterus, when it ſuddenly terminated there; nor did even the very leaſt mark of injury, of corruption, or cicatrix, appear thereabout, nor in the neighbourhood of that part: ſo that it ſeem'd

(*b*) Epiſt. 57. n. 10.
(*c*) Hiſt. Podagr. & cæt. ad finem.
(*d*) N. 2.
(*e*) Epiſt. 63. n. 13.
(*f*) N. 18.

natural to ſuppoſe the tube to have been in this ſtate from the original conformation.

On the right ſide, the tube had its termination at the ovary indeed; but ſo concreted was it with this part, that neither any of the fimbriæ of it appear'd; nor could the ovarium be brought into view, without cutting away the tube which had grown into one ſubſtance with it, and cover'd it; eſpecially as the ovarium was ſmall in this ſubject.

This body conſiſted of a whitiſh ſubſtance, which, when cut into, was ſeen to be internally moiſt with a whitiſh humour, and to contain ſome white globules. While the uterus was taken out of the body, together with the vagina, and the bladder; which was extremely large, and diſtended with urine; and likewiſe together with the inteſtinum rectum; a large and unuſual quantity of fat was obſerv'd to be lying around that inteſtine: and this was the more remarkable in a woman who was not fat: and at the ſame time a ſtrong and putridly-ſmelling ichor, ſimilar, in its appearance, to water wherein freſh meat has been waſh'd, was diſcharg'd from the pudendum and anus.

The internal ſurface of the fundus uteri, was univerſally moiſt with a ropy humour of a yellowiſh brown, and obſolete colour: and through this ſurface were ſeen reddiſh points, and little lines, which were increas'd by the preſſure of the fingers underneath; that is, from the blood being preſs'd out from the lower part into them. In the cervix and the oſculum uteri, there was nothing worthy of remark.

But the vagina, which was, internally, of a pale and brown colour univerſally, had a foramen of a circular form, in the middle of its poſterior paries, ſomewhat nearer to the lower orifice, than to the oſculum uteri: the diameter of this foramen was equal to two fingers breadths; being comprehended within edges of a very black colour, and of a very diſagreeable odour. This foramen open'd into the inteſtinum rectum.

17. In regard to the diſorders brought on by poiſon, whereto related the fifty-ninth letter, I have nothing to add here. For, although the praiſes which an antidote, found out by that eminent phyſician, whom I have deſervedly commended at other times; I mean John Larber; againſt both the bite of a viper, and of a mad dog, have ſince then been brought to me, by no vulgar fame; yet as I am pretty well inform'd that this celebrated man is now writing a diſſertation, wherein he relates not only his experiments made upon dogs, by the ſame antidote, but alſo gives us very happy inſtances of cures peform'd thereby, upon human bodies; I chooſe rather to refer you thereto; that from thence you may fully and diſtinctly learn every circumſtance relative to this remedy; rather than give any few and imperfect hints at preſent.

You muſt wait, therefore, till this diſſertation ſhall appear, as I hope it will ſoon. Farewel.

LETTER the SEVENTIETH

Contains ſome Things which were promis'd in the latter Part of the Sixty-ſixth Letter; and relates to ſome Diſorders of the Belly and Thorax.

1. YOU congratulate me, my friend, upon having finiſh'd the diſſections and lectures of this winter alſo; and I acknowledge your benevolence, towards me, therein. But I am, at the ſame time, very ſenſible what ſecret view you have in ſuch a gratulation; that is, you intend to put me in mind of the promiſe I made you, in the latter part of the ſixty-ſixth letter, that after I had finiſh'd the buſineſs of this anatomical year, I would give ſome farther remarks upon a ſubject treated of in that letter.

And indeed you have a right to claim my promiſe; nor will I ſuffer you to call upon me again. For I will not only fulfil my engagement, but will go much farther. For I will give you an hiſtorical account of the inſpection of each body that I have made ſince the writing of that letter to you, of whatever kind theſe may be, although one well deſerves to be written to you of itſelf; as by theſe means you will learn what was the event of our farther enquiries, by diſſection, after that uvula.

2. There were, in all, five bodies diſſected this winter; at the ſame time that ſeveral experienc'd diſſectors, not to mention the ſtudents whom I taught anatomy, and who form'd a crowded circle around us, were looking on. The firſt was diſſected in the hoſpital, before the middle of December in the year 1759.

3. This body was that of a woman who had labour'd under a hernia, and had been carried off by an inflammation of the inteſtines ariſing therefrom; and from this they had taken out the greater part of the viſcera, in order to ſelect, and prepare, parts from the remainder of the body, proper for the demonſtration of the elements of anatomy, as my method of beginning is; ſo that I examin'd no other part, beſides the head and the genitals.

The cerebrum, although it was firm, and even ſomewhat hard; nevertheleſs had that very part of the choroid plexuſſes, within the lateral ventricles; where they are reflected upwards at an angle, to cover the thalami nervorum opticorum; beſet, on both ſides, with a heap of mucus as it were, of a dirty aſh-colour, form'd into the figure of a ſpheroid, and of the thickneſs of an inch. But there was no other appearance that deſery'd notice; except a heap of hydatids, which are frequently found to be ſeated upon that part of the plexuſſes in particular, though not in ſuch a quantity as here.

In

In the genital parts there was nothing worthy of obſervation. I therefore laid open the annex'd urinary bladder, which was contracted into itſelf, together with the urethra. And on the internal ſurface, indeed, of the bladder, before it came near to the orifice, we ſaw two roundiſh, ſmall, depreſs'd, ſomewhat red, and ſmooth glands, as it were, protuberant; but at the very orifice, or within it, we could ſee no prominence whatever, not even the moſt ſlight.

And that you may conceive, with what attention and diligence I made the enquiry; I did not fail to obſerve an unuſual kind of little line, which, conſidering the ſhortneſs of the urethra, deſcended for a conſiderable tract, in a direct and longitudinal courſe, through the interior and poſterior ſurface of the urethra; and in the middle of its deſcent became ſomewhat wider.

Yet this little line did not begin but below the beginning of the urethra; and was ſo low and depreſs'd, that it could ſcarcely be perceiv'd, amongſt thoſe blackiſh blood-veſſels, which we frequently ſee deſcend through the female urethra in a parallel direction; and whether ſuch a depreſs'd ſtate, and ſuch a ſituation, ſhow it to have any relation to that uvula, which is deſcrib'd to us, you readily perceive, though I am ſilent upon the ſubject.

4. The ſecond body which was diſſected in the ſame place, about the beginning of the year 1760, offer'd many things to us that were worthy of obſervation; for which reaſon my deſcription will alſo be longer.

5. A porter, of two-and-fifty years of age, who was much given to drinking, and frequently intoxicated thereby; and who us'd to indulge his appetite for food very much, though not with what was unwholeſome; was not only not of a valetudinarian conſtitution, but ſo far healthy, that being diligently queſtion'd by his companions, for the reaſons you will hear below, nothing elſe could be learn'd, but that he was wont to complain, every now and then, of a kind of uneaſineſs, the ſeat of which he pointed out by laying his hand upon the epigaſtrium, about the ſcrobiculus cordis.

This man, therefore, having come three months before into the hoſpital, on account of a continual tertian fever; began, upon the going off of this fever, to be ſubject to vomitings, whereby his food was thrown up: and theſe return'd again, after having intermitted ſome time, nor went off any more through the whole courſe of his life.

Therefore, although he never vomited up any thing but what he took down, and theſe without any ill taſte, or ſmell, except that generous wine which they call *Moſchato*; beſides which, that was given by way of cordial, he could retain nothing to ſupport him, for the whole laſt month of his life; yet, for this reaſon, he was oppreſs'd with a very great waſting of fleſh, and the return of a fever, though now of a ſlow kind: and in this manner he haſten'd to his end, never having complain'd, in the hoſpital, of any tumour of the belly, or of pain whatever; nor did his pulſe, ſave a little intermiſſion at ſome times, ſhow any thing that was peculiarly diſagreeable.

Whatever was internally or externally applied, in order to reſtrain theſe vomitings, was without effect.

And indeed quickſilver itſelf, which had been given about a month before his death, in the quantity of three ounces, at a time when an obſtinate coſtiveneſs gave ſome apprehenſions of an iliac paſſion coming on; was neither

neither of any advantage, nor was ſeen by any one afterwards, when the glyſters which had been thrown up, were return'd; although the attendants ſuppos'd it to have been diſcharg'd together with the fœces, ſome time after, when the inteſtines began to be a little more relax'd.

Finally, when I examin'd the body after death, I ſaw it reduc'd to ſo emaciated a ſtate, that on the back of the hands, and the upper part of the feet, the bones of the metacarpus, and of the metatarſus, could be exceedingly well demonſtrated: and the eyes, by reaſon of the defect of fat in the back-part of their ſockets, were ſunk inwards to a ſurpriſing degree, yet were found nevertheleſs; although from the lobe of the left external ear, a ſlender ring of braſs hung down, which is generally a mark of a diſorder having formerly preceded in the neighbouring eye. As the mouth happen'd to be open, I obſerv'd that few teeth remain'd.

Theſe were the appearances externally: but by opening the ſeveral cavities, I found ſuch appearances in the belly, the thorax, and the head, as I ſhall accurately deſcribe; beginning with thoſe of the head.

In diſſecting the cerebrum, a ſmall quantity of water was found in the lateral ventricles: and on the plexus choroides, in that very place where, in the body ſpoken of above, I ſaw a great number of hydatids, I ſaw one at leaſt; but this was pretty large, and at firſt reſembled mucus likewiſe: I then ſaw the pineal gland to be very ſmall; but this gland had, within it, a corpuſcle which, in proportion to the ſize of the gland, was not very ſmall; being of an irregular figure, hard, not friable, and, in colour, of an obſolete yellow. The ſpinal marrow; for this part, and all the moſt conſiderable nerves, I demonſtrated to the pupils, in their ſituations, according to my uſual method; was very lax.

In the thorax, I ſaw the heart to be without any fat, as I expected it to be; but I found, what I did not expect, particularly in a man who was of a tall ſtature, rather than otherwiſe, and who had been always employ'd in a laborious life, and us'd to lift and carry burdens; I found, I ſay, the heart to be ſo ſmall, as I never remember to have ſeen it in adults: for it ſeem'd to be the heart of a child, and not of a man; being correſpondent to this ſmallneſs in all its dimenſions, and in the thinneſs of its parietes.

However, beſides the veins, which were in a varicoſe ſtate, in ſome places, on the ſurface of the heart, no mark of diſeaſe occurr'd internally, or externally; nor yet was there any in the valves of the aorta, though the trunk of that veſſel ſeem'd to be dilated.

Before I ſpeak of the belly, I cannot omit here, that the diaphragm, in the right part of its centrum tendineum, or nerveum, as it is call'd, was become bony; or at leaſt, that in this part, betwixt the pleura and peritonæum, was a bony lamina not very thin; conſiſting of an inch and a half in length, but narrow, particularly in a part near to one of the extremities: the nearer it approaches to the other extremity, the wider it becomes, yet never exceeds the breadth of a man's little finger at the apex; for I have preſerv'd it, and had it before my eyes when I wrote this deſcription.

Finally, the belly had ſcarcely any appearance but what was natural; if you except the inteſtines, and the ſtomach in particular.

The

The inteſtines were, here and there, diſtinguiſh'd with a livid ſpot: I omit what is the natural conſequence of that long-continu'd diſcharge of the aliments, which I have related; I mean, that they were unuſually thin and contracted, and the large inteſtines as well as the ſmall; though the former were ſo only for a ſhorter tract, as they contain'd ſome excrements, though very few.

But the ſtomach, being in an unuſual ſituation, of a ſurprizing length, and inflected in a ſtrange manner, afforded us an uncommon ſpectacle. For, beginning from whence it generally does (nor was any part of the œſophagus carried down into the belly in this ſubject) it extended itſelf through the left ſide of the belly, in a ſtrait direction, quite to the os pubis, and reflecting itſelf upwards from thence, and to the right ſide, it terminated in the inteſtinum duodenum.

The breadth of this ſtomach was but ſmall in proportion: nor did it contain any thing elſe but a kind of thin, and pultice-like maſs, as it were, which I ſuppoſe was the remains of that ſmall part of the aliments, which had been ſometimes retain'd.

You will aſk me then, whether I think there was no quickſilver in the ſtomach; and I anſwer, that I ſuppoſe there was; but that while the ſtomach was mov'd to one ſide, it had paſs'd into the inteſtinum duodenum. For in this inteſtine, which had been previouſly conſtring'd, by applying a ligature a little below the pylorus, it was found to the quantity of an ounce and a half: but in the other inteſtines there was none; as thoſe to whom the care of the enquiry had been committed, reported.

But this was laſt in order. For having previouſly perceiv'd a hardneſs, by handling the ſeat of the pylorus externally; upon opening the ſtomach, I ſaw the ring of the pylorus, divided as it were, into two or three protuberances, not large indeed, but hard.

The part of the ſtomach neareſt to the pylorus, was hard alſo, for the ſpace of two fingers breadths, the coats being grown very thick in that part, and approaching to the hardneſs of a bone; yet not being really bony, nor capable of ſtreightening the paſſage: but, by reaſon of their inflexible ſtate, they were not ſufficiently capable of impelling the aliments into the inteſtinum duodenum.

Beſides theſe things, and a ſlight lividneſs on the internal ſurface of the ſtomach; which was extended from thoſe indurated coats for a ſhort ſpace, I obſerv'd no other morbid appearance in that viſcus.

But having before obſerv'd the bladder in its ſituation, and found it to be ſound externally, and to contain no large quantity of urine; and having remark'd ſome things, which do not belong to this place; I open'd it and found it be equally ſound within, as the annex'd urethra was alſo. But we could not ſee the leaſt ſign of a roundiſh protuberance, at the orifice from whence the urethra begins; that is, we could not ſee the leaſt appearance of a uvula: but in the place where this ought to have been found, came into ſight only that ſlender little line, which terminated in the ſeminal caruncle, as it does generally.

6. Although I do not remember to have lit on an oſſification of the ſeptum tranſverſum before; yet that very conſiderable ſmallneſs of the heart, and the

ſeat

ſeat of the ſtomach, ſo different from the natural appearance, ſtruck my mind far more than the other; as I could not readily deviſe any reaſon, whereby I could conciliate both of the circumſtances with the appearances which had been in the patient, when living, and with thoſe that had been wanting.

For if I had ever ſeen the heart alſo, as well as the other muſcles, to be diminiſh'd in its bulk, in an extremely emaciated ſtate of body; I certainly ſhould not enquire,, how, before this emaciated ſtate, it had been capable of affording ſtrength to a porter. Did the arteries then, ſupply what the heart could not?

But how could their parietes be ſufficiently urg'd and dilated, by a heart which was not only diminiſh'd in its fleſh, and its muſcular ſtrength, but which, by reaſon of its ſmallneſs, had little blood to impel into them; ſo as to make them reſtore themſelves very ſtrongly ſoon after, and puſh on the circulation?

But theſe difficulties, I readily leave for that ingenuity which you are well known to poſſeſs, to determine; as I alſo do that which relates to the ſituation of the ſtomach. For you muſt either deduce it from the original formation, or from ſome cauſe which brought on a prolapſus of the viſcus; examples of which kind I have before taken notice of to you (*a*).

But if you chooſe to ſuppoſe the latter; it is ſurpriſing that ſymptoms ſhould be wanting to indicate this new diſeaſe; ſuch as an unuſual pain, or tumour; and eſpecially in a man who was by no means a valetudinarian.

And if you ſuppoſe it to have exiſted from the original formation; you ſee it is no leſs ſurprizing, not only that there never were, at any time, very manifeſt ſymptoms of the ſtomach being affected; but even that a very great quantity both of wine, and of food, which was continually taken in and digeſted, and that without being ſufficiently reduc'd by maſtication, as there were few teeth, had ſhown in how flouriſhing a ſtate this viſcus was, till at length, after the tertian fever, thoſe vomitings were firſt brought on.

For that an irregular method of living of this kind, had, at length, ſo vitiated the pylorus, and the neighbouring part of the ſtomach, that the motions of the ſtomach muſt of courſe be inverted; rather than the aliments be driven down into the inteſtinum duodenum; is ſo far probable, that there is no neceſſity to account for the vomitings from that ſituation of the ſtomach, whether you conſider it as congenial, or as new; as they muſt have exiſted always, if they had been the conſequence of ſuch a congenial ſituation: and if they had been from a new ſituation of this kind, they would not have come on, without ſome tokens of this change which was ſo recent.

But we muſt now go on to the appearances obſerv'd in the third body.

7. A wool-comber, who was a young man, or at leaſt not much more than that, having lain in the hoſpital three or four days, had departed this life juſt at the time of beginning the public anatomy of this year 1760. The body was, therefore, brought into the theatre; and every one who look'd at it, ſuppos'd it to be very proper for diſſection, from the ſmooth ſkin, and ſound appearance which it every where ſeem'd to have; beſides that it was rather of a large ſtature.

(*a*) Epiſt. 39. n. 14. & ſeqq. & Epiſt. 65. n. 15.

As

As the belly had ſwell'd in a ſhort time, and begun to look green; although I ſuſpected what marks of diſeaſe might be latent in the body of a wool comber, and was ſoon after well inform'd, by an acquaintance of this man, when living, that he had formerly expectorated blood; yet I began to demonſtrate the viſcera of the belly in the mean time, till I could light on an opportunity of having a better ſubject: and about theſe viſcera lay a conſiderable quantity of water, ſimilar to urine; but ſcarcely any ſtench was obſerv'd, and but a ſlight lividneſs of the inteſtines.

And indeed the omentum was ſound, though waſted: the ſpleen was larger than it naturally is, and that in a conſiderable degree; but was neither hard, nor lax: the coats of the gall-bladder were thick, and the bile contain'd therein ſomewhat pale; but the liver was ſound, and of a proper magnitude: the glands of the meſentery were larger than they naturally are; but not hard.

Nor did there appear to be any diſorder in the ſtomach, nor even in the inteſtines themſelves; although they were, as I have ſaid, ſomewhat livid. For as to the colon deſcending towards the navel, in almoſt the middle tract of that tranſverſe arch which lies below the ſtomach, and being reflected upwards from thence to the left hypochondrium; it ſeem'd natural to conſider that rather as a variety, than as a diſeaſe, as this certainly was; though it had never occurr'd to me before; I mean, that an artery, of no very ſlender dimenſions, paſs'd from the left emulgent, quite to the urinary bladder, in ſo oblique a direction, that it was inſerted into the poſterior ſurface of that viſcus, near to the right veſicula ſeminalis.

But whether the circumſtances of there being no flexures in the ſplenic artery, or of ſome few ſulci being carried through the whole anterior ſurface of both kidnies, obliquely, and without any certain order; were to be conſider'd in the claſs of varieties only, you yourſelf will judge: this however is certain, that I found the ſtructure and ſubſtance of the kidnies, and of all the other parts which were form'd for the ſake of urinary ſecretion, to be very ſound.

Yet neither within the lower part of the urethra, nor within the upper part of the bladder, could I, or any of thoſe many perſons who were preſent, ſee any thing protuberating, beſides that which was ſpoken of in the laſt-preceding carcaſe.

However, we did not go on to demonſtrate any other part in this body; for it would have been neceſſary to paſs on to the thorax, which; as I had ſuſpected, and as they, who were willing to examine it ſlightly before burial, evidently confirm'd; contain'd lungs half rotten, out of which a putrid and ſtrongly ſmelling matter was effus'd.

8. The fourth and fifth bodies were both of them thoſe of women, who had died in the hoſpital in the mean time. But from the firſt, only ſome of the thoracic and abdominal viſcera were brought into the theatre. Let us begin with theſe.

9. An old woman had died of an aſcites.

The ſubſtance of the heart was pallid.

The left kidney; though leſs than the right, and of a ſurface ſomewhat

unequal, by reaſon of a very few furrows, as it were; had nothing internally, however, which differ'd from the uſual appearances of nature.

While I was examining theſe parts, I obſerv'd that two cæliac arteries aroſe from the aorta inſtead of one, though indeed they were very near to each other, and even contiguous; being each of them, however, furniſh'd with its proper orifice; and likewiſe that two ſpermatic veins return'd from the corpus pampiniforme on the left ſide, into the emulgent vein of the ſame ſide: and that one of thoſe two arteries, and one of theſe two veins, was leſs than the other. Yet theſe were only varieties in nature.

But it was the effect of diſeaſe, that, in the fundus uteri, was prominent laterally, a round, white, hard, and middle-ſiz'd excreſcence. At length, opening the urinary bladder, which was perfectly ſound, I ſaw that thoſe two bodies indeed, which deſcend from the ureters, did not come together at an angle; but by a curv'd body, into which they degenerated, and which was, equally with themſelves, thick and prominent: but that any thing was ſent from hence to the orifice of the bladder, which was at leaſt at the diſtance of a finger's breadth therefrom, I could not ſee; and ſtill leſs that any roundiſh protuberance was prominent in the whole of that ſpace, or within the urethra.

10. Another old woman had been carried off by an inflammation of the lungs, and a diarrhæa added thereto. The body of this woman was brought into the theatre, after all the abdominal viſcera, except the uterus and the bladder, were taken out.

The thorax being open'd, the inferior lobe of the lungs, on the right ſide, adher'd cloſely to the pleura; and this lobe being extremely enlarg'd and heavy, reſembled a boil'd liver, when it was cut into. The heart of this woman, who had been but of a moderate ſtature, was almoſt as much larger in proportion, as it had been leſs in the porter (*b*).

Nor yet was it enlarg'd, becauſe the parietes of its cavities were ſeen to be extenuated and diſtracted; for theſe were even of a proper thickneſs at leaſt, if not thicker than uſual; and their columnæ and faſciculi were certainly thicker than uſual, as the faſciculi of the auricles alſo were: ſo that I was leſs ſurpriz'd at a circumſtance, which I do not remember to have ſeen on any other occaſion; I mean, that the coronary arteries had orifices which in their diameters exceeded two lines of Bologna, and that the artery which was neareſt to the ſide of one of them, probably one of the membrana adipoſa, was not even itſelf furniſh'd with a very ſmall orifice: and in the ſinus of the pulmonary vein, beſides many ſmall orifices, I obſerv'd one to lie open, which was ſcarcely leſs in its diameter, than that I have taken notice of in the coronary arteries: and by cutting into this orifice, I ſaw that two or three veins, which brought back blood from the parietes of the ſinus, open'd thereinto.

This heart had its ventricles full of polypous concretions. And as I examin'd that part of the great artery which was contain'd in the thorax, I obſerv'd one place only, where the internal ſurface of it was not ſmooth, but prominent internally; and in that part was a bony hardneſs betwixt the

(*b*) ſupra n. 5.

coats;

coats; which however poſſeſs'd no greater a quantity of ſpace than the nail of a man's thumb might cover.

This place was on the right ſide, where the aorta, having now finiſh'd its curvature, began to deſcend in a ſtrait line. And, at the ſame time, a circumſtance occurr'd to my eyes, which was not unworthy of notice. For amongſt the arteries, which come out, two and two, from the poſterior paries of the deſcending aorta, quite to the diviſion of its trunk, it is not rare that inſtead of two, one only is ſometimes diſpatch'd.

But here, below the two upper pairs of the lower intercoſtal arteries, the three next were wanting; one middle orifice occurring three times ſucceſſively, inſtead of two: and this not larger than the others, nor immediately divided into two; as generally is the caſe where there is but one, but even produc'd into a ſolitary artery, for the ſpace of a finger's breadth at leaſt; that is to ſay, as far as it had been left adhering to the aorta beneath.

But, on the other hand, the diaphragm (for now that we have begun to ſpeak of varieties, I am not willing to omit this, although it has been frequently both ſeen and demonſtrated by me) inſtead of one foramen, for tranſmitting the vena cava into the thorax, had two foramina, divided by a very ſlender interpoſition indeed, but by one that was very evident.

Finally, the belly exhibited ſome remarkable appearances, in thoſe lower parts which had been left in it. Each of the ovaries, and particularly the right, being of a white colour, very much larger than it us'd to be, and of a tuberous texture, was made up of tuberoſities, or hydatids, among which were ſome ſo diſtended with water, more than the others, that if you prick'd them pretty deeply, the fluid burſt forth with impetus. Yet both of the tubes were entirely free therefrom.

The internal ſurface of the fundus uteri, was of a red colour inclining to black, by reaſon of the blood ſtagnating there in many places; and if, in order to preſs out this blood, you laid your fingers under the uterus externally, that internal ſurface was lacerated by reaſon of its laxity.

This circumſtance, and another, that I obſerv'd in this body, which on account of its ſingularity ought not to be omitted here; I mean in regard to the two nerves (*c*), into which I had divided the poſterior crural nerve by the interpoſition of the hand only; for when I had cut one of them, which was ſomewhat larger than its fellow, aſunder into two parts, and that in a longitudinal direction, I found a veſſel betwixt the fibres thereof, and almoſt parallel thereto, nor lying far from the axis of the ſame nerve, full of blood, the diameter of which veſſel was almoſt equal to a line of Bologna; theſe two circumſtances therefore, as I had begun to ſay, gave me a ſuſpicion that blood would alſo be found to have ſtagnated, not only in the veſſels of the pelvis, and thoſe that go thereto, but in the bladder alſo, and the annex'd urethra; and that perhaps in ſuch a quantity as to prevent my uſual enquiry.

But when both theſe laſt-mention'd parts were laid open, I found the internal coat of the urethra indeed, to be univerſally of a blackiſh colour,

(*c*) Vid. Epiſt. 69. n. 2.

from the great number of its ſmall veſſels; which were parallel in a longitudinal direction: and the more ſo, the more it deſcended to its lower orifice, which was lax, and ſuffer'd a relax'd little part of the ſame coat, on the right ſide, to be prolaps'd outwards, as I have ſeen in ſome other women (*d*); yet the upper part of the urethra had nothing beſides its colour that prevented our obſervation, and the bladder not even that.

For it was very ſound, and ſhow'd thoſe two protuberating bodies, which come from the ureters, to be join'd together pretty nearly at an angle; which angle was diſtant from the orifice of the bladder, by the ſpace of a finger's breadth.

But neither in this interval, nor in that orifice, nor in the neighbouring urethra, did any thing roundiſh, or even ſlightly protuberant, offer itſelf to my eyes, or the eyes of thoſe who attentively inſpected thoſe parts with me; and to ſay all in a word, there was neither trace nor ſhadow of that uvula.

11. Thus you have the event of this my enquiry, after being repeated in five different bladders, none of which was diſtended, either with a quantity of urine, or with a quantity of injected air, if you except the third; into which, however, ſo great a quantity of air had not been introduc'd, as was ſufficient to demonſtrate its figure to the full extent.

Nor did we diſſect any more bodies this winter; but took different parts from different bodies among theſe, in order to be ſubſtituted in the place of thoſe that were leſs ſound; and by this means at length, not unſucceſsfully, put the finiſhing ſtroke to my lectures; in which the whole round of anatomical ſcience is comprehended; for this year alſo: and it is now the five-and-fortieth year ſince I undertook the very weariſome office of teaching this part of medical knowledge.

12. As to what remains; if you ſhould wonder, that in this letter I have not preſerv'd my uſual method; I mean, of making ſome remark upon almoſt every hiſtory, and even ſometimes of making a great number; and, on the other hand, of interſperſing, here and there, only very few varieties that I had obſerv'd in diſſecting, and not ſo frequently; as to the firſt occaſion of your wonder, let me obſerve, that I did not preſerve my method, both becauſe I choſe to ſend you very ſoon an accompliſhment of my promiſe, and becauſe I had already made a ſufficient number of remarks upon moſt things of this kind in many other letters: and as to the latter occaſion of ſurprize, be aſſur'd, that I did not do it ſo much becauſe this letter might otherwiſe ſeem to be too ſhort, as becauſe my hope now begins to fail me, of having ſo long a time yet to live, as would enable me to collect, into a ſeparate work, all the varieties that I have omitted, and many in like manner, to which I every now and then denied a place among the deſcriptions of morbid parts; that is to ſay, in ſome obſervations of mine, which relate to the anatomy of the ſame parts, when in a natural ſtate. You will therefore receive both my intentions in good part, according to your benevolence. Farewel.

(*d*) Epiſt. 50. n. 51. & Epiſt. 56. n. 21.

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Long warm after death, IX. 12.
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Thick and viſcid, XVI. 14. XVIII. 2.
Inclining to coagulation, VIII. 23. XVIII. 30. XXI. 19. 45. XLVIII. 37.
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Inclining rather to fluidity than to concretion, XX. 13.
Without any polypous concretion in any part, LII. 30.
Fluid, I. 2. III. 24. 26. IV. 2. 8, 9. 11. 24. 26. 35. V. 17. VII. 2. 7. VIII. 4. IX. 12. X. 2. 7. XV. 6. XVI. 4. 10. 19. XIX. 3. 17. 19. XX. 15. 47. 49. XXII. 8. 10. XXIII. 4. XXV. 2. XXVI. 21. 31. XXIX. 8. XXXI. 2. XXXV. 10. XXXVI. 2. 20. XXXVIII. 2. 6. 10. 12. 16. 22. XLIII. 28. XLV. 23. XLIX. 12. LI. 14. LIII. 26. 40. 44. 46. LVI. 17. LXII. 5. LXIV. 5.
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Black, and reſembling fluid pitch or tar, IV. 19. VIII. 27.
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Spongy on the ſurface, carious in the meditullium, LVIII. 4.
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Breaſt of a man, having a matter within it ſimilar to calx, L. 45.
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With a green and black fluid within them, ibid.
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With bodies which degenerate from a ſcirrhous to a cancerous nature, and in what manner, L. 48.
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C

CARCASE, of a violet colour on its whole poſterior ſurface, LIX. 12.
Black, LIX. 3.
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Of an icteric colour, VII. 11. LI. 14.
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Having their coats thicken'd, LVI. 21.
Cava vena, without blood, LIV. 18.
Very much diſtended with blood, XIX. 17. XXI. 35. XXXIV. 15. XXXV. 10.
Cava vena, ſuperior trunk of, more on the left ſide than uſual, LVI. 18.

In the very extremity anteriorly eroded as it were, LIII. 37.
Inferior wider than natural, LIV. 37.
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Cerebrum, none, XLVIII. 48. 50.
Not of a natural figure, I. 14. XII. 2.
Cerebrum, abſceſs of, V. 2.
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Cerebrum, arteries of. See Baſilary. Carotid. Vertebral.
Cerebrum, arteries of, with bony ſcales, IV. 2. 11.
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All the veſſels of, diſtended greatly with blood, III. 26. VII. 7. 13. VIII. 12. 15. 23. IX. 12. 14. 20. XIV. 5. XXIII. 6. LV. 20.
With air-bubbles, LIII. 26.
With polypous concretions, XLV. 21.
Cerebrum, meninges of, ſomewhat thicker than uſual in ſome places, LI. 3.
With their veſſels pretty full of blood, LXII. 15.
A little green and livid in ſome places, LII. 2, 3.
Ting'd with the colour of pus, LI. 28.
Sanious in ſome places, LI. 3.
Water beneath them, LII. 2.
Cerebrum, meninges of, both having their veſſels much dilated with blood, XLIII. 27. XLIV. 3. LII. 35.
Having their arteries thicken'd, indurated, and bony in ſeveral places, XXVII. 28.
Perforated by an eroſive humour, IX. 20. XIV. 3. LI. 12.
Wounded, LI. 45.
By great bony fragments, LI. 35.
Chang'd into a more thick and flaccid nature, IX. 23.
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A few drops of water, X. 5.
A gelatinous concretion, VI. 10.
A little jelly as it were, LII. 23.
Something like mucus, LII. 19.
A thickiſh ichor, LII. 8.
A ſanies, LI. 5. 7. 34.
Much ſanies, LI. 15.
A kind of condens'd pus, LI. 14.
Pus, LII. 4.
A little purulent matter, LI. 57.
Purulent matter adhering cloſe to, LI. 49.
Coagulated blood, LI. 37. 50. LII. 30. 32.
Adhering very cloſely, LI. 6. 38.
A great quantity of blood, LII. 35.
Cerebrum, dura mater of, fixed more cloſely than uſual to the cranium, III. 11. XXVII. 2. XXXVII. 30. LXVII. 14.
More cloſely than uſual in ſome places, LII. 38. LXIII. 8.
Grown into one ſubſtance with the pia mater and cerebrum, I. 14. IX. 25.
Having its veſſels diſtended with blood, VII. 13. VIII. 4. 25. 27. XXIV. 6.
More on one ſide than on the other, LII. 30.
And dilated more on one ſide, LII. 38.
Somewhat turgid, XIX. 7.
Artery of, lacerated, LI. 37.
With its ſinuſes, diſtended by a great quantity of blood, V. 19. XVIII. 2.
With air-bubbles alſo, LIV. 49.
With polypous concretions, V. 11. VI. 12. VII. 4. 6. 9. 11. 13. VIII. 2. 23. XIV. 35. XXIV. 16. LII. 6.
Sinus, longitudinal, perforated, LI. 54
Lateral, on each ſide ruptur'd, LII. 25.
The falx thicker and harder than uſual, XXVI. 33.
And a great bone therein, III. 20.
A ſmall one, XXI. 35.
Many ſharp-pointed bones, XXV. 6.
Cerebrum, dura mater of, very much corrugated, VII. 9.
Become thicker than uſual, V. 6. VIII. 15. XLIX. 16. LX. 12.
In ſome places, I. 14. LI. 2. 45. LII. 6. 19. 38.
Almoſt bony in ſome places, I. 10.

Of

Of a granulated ſurface as it were, LII. 19.
Of a cineritious colour, I. 2.
Almoſt in ſome places, LI. 27.
Yellowiſh in ſome places, LI. 2.
Somewhat livid here and there, LI. 19.
Somewhat black, from a fullneſs of the veſſels, III. 11.
Slightly black, as from contuſion, LII. 28.
Diſtinguiſh'd with bloody drops as it were, VII. 15. LII. 6.
Inflam'd in ſome places, LI. 39.
Slightly, LI. 32.
Slightly injur'd in ſome places, LI. 17.
Affected with a ſphacelus as it were, LII. 4.
Eroded with pus, XIV. 5.
Injur'd by a ſcale of the depreſs'd bone, LI. 30. 34. 39.
By ſharp pieces of the fractur'd bone being fix'd into them, LI. 18.
Cerebrum, dura mater of, under this a piece of *pſeudomembrana*, or falſe membrane, adhering, LII. 8.
Air-bubbles, VIII. 23.
Water, V. 19. VI. 12. VII. 6. VIII. 11. 15. IX. 2. X. 7. 9. 11. XI. 6. 11. XVI. 36. 40. XXV. 2. XXXVII. 2. LI. 9. 14. 17. 32. LII. 38.
Limpid water, I. 2. II. 22. IV. 11. 30. VI. 8. XI. 4.
Mucous ſerum, LII. 2.
Gelatinous ſerum, VII. 6. XI. 2.
Sanious ſerum, I. 2.
A kind of yellow jelly, LII. 15.
Sanies, LI. 11.
A puriform matter, I. 12.
Pus, LI. 2. 17. 27, 28. 30. LII. 6. 19.
Blood, LII. 34.
In great quantity, LI. 51. 54.
Blood at one ſide of the cerebrum, II. 17. III. 2. 14. 17. 20. IX. 2. 4. X. 13. LX. 4.
About the cerebellum, II. 21. 22. III. 2. 24.
At the egreſs of the ſpinal marrow, II. 20.
Cerebrum, pia mater of, thereto adhering externally a little ichor, LII. 8.
A little mucus of a yellow and green colour, and very fœtid, LII. 10, 11.
A coagulum of blood, by no means ſmall, LXIX. 2.
Cerebrum, pia mater of, its veſſels turgid with blood, I. 14. III. 2. 6. 11. IV. 13. 16. 19. 21. 24. V. 6. 11. VI. 14. VII. 13. 15. 17. VIII. 4. 25. 27. XI. 11. 22. XIV. 3. 27. 35. XV. 8. XVI. 40. XVIII. 2. XXI. 23. 29. 33. 35. XXIV. 6. XXV. 10. XXVI. 19. 21. 35. XXXVII. 4. XLVII. 12. 33. LI. 35. 42. LII. 6. LIII. 40. LIV. 39. LV. 10. LX. 4. 6. 8. 12. LXII. 5. 7. LXVII. 14. LXIX. 2. 4.
Not all of them, V. 15. VII. 9.
Moſt on one ſide, LII. 30.
On one ſide only, VII. 11. LX. 2. LXII. 9.
Turgid with air alſo, IV. 19. V. 17. 19. VIII. 9.
With air-bubbles, XLVII. 38. LIII. 26.
With polypous concretions, VI. 14.
Some veſſels varicous as it were, LI. 15.
Some arteries dilated, IV. 19. XXXVII. 30.
Trunk of the carotid lacerated, II. 30.
A certain artery with a peculiar diſorder, III. 6. IV. 19.
Cerebrum, pia mater of, become thicken'd, LI. 30.
Whitiſh here and there, XI. 13.
Externally greeniſh and yellow for a conſiderable ſpace, XXXVII. 7.
Inflam'd, VII. 11. 13. LI. 59.
Slightly inflam'd, VI. 8. LI. 42.
Perforated, III. 2. 17.
Eaſily ſeparable, IV. 4. 16. 24. V. 11. 19. VII. 17. VIII. 12. XI. 11. XXIV. 34. XXVII. 28. XLVII. 33. LI. 30. LXI. 2.
Cerebrum, pia mater of, within it water, I. 4. II. 17. 22. IV. 2. 6, 7. 16. 19. 24. 26. 30. 35. V. 6. 17. 19. VI. 8. VII. 13. 15. VIII. 6. 9. 11. IX. 3. X. 11. 13. 15. XXI. 23. 24. 29. XXV. 10. XXVII. 2. XXXV.

16. XLVIII. 38. LI. 42. LII. 6. 8. LIV. 39.
Almoſt limpid, X. 13. XIV. 35.
Turbid, VII. 2.
Yellow, VI. 14.
A little bloody, VII. 9.
Inſipid, or very ſlightly ſalt, LIV. 49.
In a manner gelatinous, II. 22. III. 14. IV. 4. 9. 13. V. 11. VI. 2. 12. VII. 2. 11. IX. 9. X. 7. 17. 19. XI. 2. XV. 6. XXI. 35. XXXVII. 2. LI. 6. LXII. 9.
Air-bubbles, IV. 26. 35. VIII. 9. IX. 9. X. 17. XIV. 35. LIV. 39. 49. LVII. 14.
Blood, II. 19. III. 4.
On one ſide, III. 16. LII. 30.
Sanies, V. 11.
Cerebrum, laxer than uſual, I. 6. II. 9. III. 6. IV. 4. 9. 11. 13. 26. 35. V. 11. VII. 4. IX. 4. 23. X. 11. XI. 11. 22. XV. 6. XVI. 40. XVII. 23. XXI. 29. 35. XXVI. 21. XXXIV. 23. XXXVII. 2. 30. XLVII. 12. 36. XLIX. 16. LI. 9. LV. 10. LVII. 10. 14. LIX. 15.
Cerebrum, hard, I. 10. V. 6 VIII. 4. 6. 8, 9. 11, 12. 15. IX. 9. X. 17. XXIV. 6. LXI. 2. 5. 7. LXII. 15.
Rather dry, VIII. 23.
Diſcolour'd, I. 12. IV. 4 11.
Not quite of its natural colour, XXXVII. 2.
Somewhat yellow, III. 2. IX. 20.
Having a ſomewhat diſagreeable ſmell, VII. 9.
Fœtid and blackiſh, from a ſerous colluvies, LI. 12.
Wounded anteriorly, LI. 59.
Cerebrum, part of, ſomewhat pale, LI. 28.
Somewhat brown, LI. 7. 11.
Somewhat livid, LI. 27.
Livid, LI. 14. LII. 2, 3.
Inclining to a cineritious colour, LI. 30.
Being ſomewhat black, LI. 49. LII. 10.
Half putrid, I. 14. IX. 18.
Deeply corrupted and ſanious, LI. 33.
Hard, IX. 23. 25.
Not of a natural figure, X. 9.
Conſiderably affected to ſome extent, both in breadth and depth, LI. 34.
Cerebrum, cortex of, ſomewhat yellow and pale, XXV. 10.
Somewhat black here and there, LII. 10.
In a certain place of the colour of pus on the ſurface, LI. 17.
Corrupted on the ſurface, in one very ſmall place, LI. 3.
Cerebrum, medullary ſubſtance of, ſofter than the cortical, LV. 20.
Brown, IV. 21. VIII. 9. XXXVII. 30.
On one ſide only, V. 15.
With ſmall veſſels, or bloody drops more evident than uſual, I. 14. III. 6. 14. 26. IV. 21. V. 19. VII. 13. VIII. 25. X. 17. XV. 8. XXI. 33. 35. XXV. 10. XXVI. 19. XXXIV. 15. XXXV. 16. XLIV. 3. XLV. 16. L. 55. LII. 30. LIII. 40. LIV. 39. 44. LV. 20. LX. 8. LXII. 5. 15.
Extremely evident, LXIX. 4.
Cerebrum, one hemiſphere of, white and green in great part of it, LII. 23.
Somewhat eroded, XI. 2.
More deeply eroded, LI. 44, 45.
Corrupted in one part, I. 6.
To the bigneſs of an apple, LII. 28.
The ſubſtance almoſt fluid for a certain ſpace, and of a dirty blood-colour, LVII. 14.
With a ſinus in the corrupted ſubſtance, XI. 6.
With an abſceſs, V. 2.
With a very ſmall abſceſs, containing a very thick pus, LI. 19.
With an abſceſs *ſui generis*, V. 6.
With a ſanious ulcer, LI. 28.
Internally lacerated and hollowed out by the blood, III. 2. 4. 6. 17. LX. 2. LXII. 9. 11.
With a certain large cavity, in which was a brown ſerum and a coagulated blood, IX. 20.
With a certain ſmaller cavity, in which was a ſerum with filaments, IX. 23.

Full

Full of half-dried mucus, III. 6.
Full of black blood, LXIII. 13.
Subsiding from the compression of blood upon it, LII. 30.
Deeply perforated with a wound, LI. 54. 57.
Deeply lacerated with a wound, LI. 53.
With a wound in which was coagulated blood, LI. 35.
In which was a serous colluvies, LI. 44.
In which was a sanious humour, LI. 45.
Cerebrum, corpus callosum of, lax, LXII. 15.
Therein two furrows, VIII. 6.
The longitudinal tract doubled in a certain place, LXI. 5.
Cerebrum, ventricles of, therein water, IV. 7. 35. XI. 15. LI. 9. LXIII. 13. LXIX. 16.
In great quantity, IV. 6. 21. 24. VI. 6. XXXIV. 23. XXXV. 6. LIV. 49.
In little quantity, IV. 9. 13. VI. 2. 10. VII. 7. XLVIII. 38. XLI. 6. 27, 28. 38. 45. LIV. 29. LXI. 2.
None, VIII. 9.
A great quantity and somewhat salt, II. 20.
A great quantity and limpid, XXXVII. 30.
A little and pretty thick, IV. 8.
Yellow, VI. 14. VII. 27.
Somewhat red, XLVII. 12.
In all of them blood, III. 11. LII. 34. LX. 4.
Almost in all coagulated blood, LI. 59.
Cerebrum, lateral ventricles of, shorter than they ought to be, X. 17.
Therein water, I. 4. III. 14. 24. IV. 16. 19. V. 11. 15. VIII. 2. 11. IX. 2, 3. 19. X. 11. XI. 13. XIV. 3. 27. XVI. 36. XX. 5. XXIV. 6. 16. XXVII. 2. XXXI. 5. XL. 2. XLIII. 4. LXIX. 8. LXX. 5.
Limpid, I. 10. III. 26. V. 6. IX. 12. XIV. 35. XV. 6. XXV. 10. XXIX. 12. LIII. 40. LV. 20. LXIX. 10.
In great quantity, XXV. 4. 10. XLVIII. 15.
In small quantity, LX. 10. 12. LXII. 9.
Limpid and in great quantity, LXII. 15.
A large quantity and somewhat turbid, LII. 35.
The same in small quantity, XLII. 11. XLIV. 7. LII. 30.
In great quantity and turbid, VIII. 4. XII. 2. XXI. 33. XXVI. 19. XXXVIII. 34.
And of the colour of urine, XXVI. 33.
Yellow, IX. 9.
Yellowish, XLV. 16.
Browniſh and in large quantity, I. 14.
Of a yellow and red colour, and in great quantity, VIII. 15.
Reddish, VIII. 25. IX. 4. 16. XXI. 23. 29. XXXV. 16. LII. 6. 9, 10. LXII. 5. LXIII. 8.
Bloody, III. 4. IV. 26. VI. 8. 12. VII. 9. 13. XI. 11. XVI. 10. XXVI. 35. XLIV. 3. LII. 23. LX. 2. 8. LXII. 7.
Frozen by the cold, XIII. 15.
Salt, IV. 2. 4.
Blood, II. 19, 20. III. 2. 16, 17.
A great quantity of, II. 13.
Purulent matter, V. 2.
Cerebrum, lateral ventricles of, in one of them a follicle fill'd with a great quantity of water, I. 6.
Limpid water, IX. 20. XI. 4.
Bloody water, LX. 6.
Æruginous water, XI. 4.
Very acrid and biting, LI. 53.
Water with grumous blood, LI. 54. LX. 6.
Salt water, X. 2.
Concreted by the frost, LXVII. 14.
Blood, II. 9. 11. 15. 22. III. 6. 11. 16, 17.
In considerable quantity, LXII. 7.
In so great a quantity as to dilate the ventricle, LII. 23. LXVII. 14.
Pus, V. 4. XIV. 5.
Cerebrum, lateral ventricles of, their surface of a browniſh colour, I. 14. V. 6.

Veſſels diſtended with blood, III. 14. V. 11. VIII. 4. X. 19. XXVII. 30. XLV. 16. XLVII. 12. LII. 30. LIII. 40. LX. 12. LXII. 15.
Membrane through which they creep eaſily ſeparable, XLVII. 12.
Their ſeptum lucidum, with the veſſels running through the ſides, very much diſtended with blood, LIV. 39.
More lax than uſual, XIV 35. LXIII. 8.
Having water within its duplicature, IV. 19. VIII. 11. LXIII. 8.
Ruptur'd, III. 2. 4. 17. V. 15. XIV. 3. XXV. 10. LX. 4. LXII. 7. LXVII. 14.
Fornix in them, very lax, VIII. 12. IX. 10. XIV. 3. 35. XXI. 33. XXV. 10. LXII. 5. LXIII. 8.
Conſum'd, LX. 4. LXII. 15.
Cerebrum, lateral ventricles of, therein the plexus choroides diſcolour'd, I. 10. III. 2. 6. IV. 16. 21. V. 11. 15. IX. 9. X. 11. XII. 2. XIV. 35. XXI. 19. XXVI. 33. XXIX. 12. XXXV. 6. XXXVII. 30. XXXVIII. 34. XLII. 11. XLIV. 7. XLVII. 12. LII. 10. 30. LX. 2. LXI. 2.
One of them, IX. 20. LXII. 7. LXIII. 13.
Somewhat pale, but blackiſh in the middle, XXV. 10.
Fuller of blood than uſual, III. 14. VIII. 23. X. 17. XXI. 35. LII. 38. LX. 10. 12.
In a manner inflam'd, II. 19.
Of a ſomewhat black colour degenerating into red, LIII. 40. LIV. 44.
One of them very much injur'd, LXII. 7.
Lacerated, II. 9. 11. 13. 15.
Both conſum'd, LX. 4.
Very lax, IX. 9.
Connected more firmly than uſual with the ſubjected optic thalami, LXI. 2.
One of them varicous, VII. 4.
In them veſicles full of water, I. 10. III. 14. IV. 11. 16. 19. 26. 35. V. 6. 19. VI. 12. VII. 11. 13. 15. IX. 2. 3. X. 11. XI. 13. XX. 5. XXI. 23. 29. 33. XXIV. 16. XXXV. 16. LV. 10. LX. 8. LXII. 7. LXIII. 13. LXX. 3. 5.
Very large, III. 11. IV. 2. VIII. 4. XXV. 10.
A body conſiſting of hydatids, XI. 6.
Many ſmall red bodies, in a manner glandular, LXII. 5.
Glands larger than natural, II. 22. IV. 24. VIII. 2.
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